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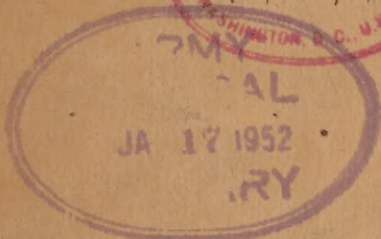
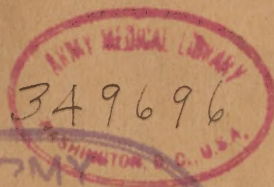
71 (War)
FM 100-5

WAR DEPARTMENT

FIELD SERVICE
REGULATIONS

OPERATIONS

May 22, 1941







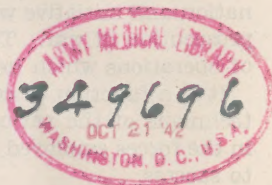
U.S. War Dept.

FM 100-5

FIELD SERVICE REGULATIONS

OPERATIONS

Prepared under direction of the
Chief of Staff



UNITED STATES
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WASHINGTON : 1941

WAR DEPARTMENT,
WASHINGTON, May 22, 1941.

FM 100-5, Field Service Regulations, Operations, is published for the information and guidance of all concerned. It contains the doctrines of leading troops in combat and tactics of the combined arms and constitutes the basis of instruction of all arms and services for field service. Additional doctrines pertaining to the defense of coast lines and landing operations on hostile shores are discussed in other manuals.

Field Service Regulations will be interpreted in the light of FM 27-10, Rules of Land Warfare. FM 100-5, Field Service Regulations, Operations, should be studied in connection with FM 100-10, Field Service Regulations, Administration, and FM 100-15, Field Service Regulations, Larger Units.

While the fundamental doctrines of combat operations are neither numerous nor complex, their application is sometimes difficult. Knowledge of these doctrines and experience in their application provide all commanders a firm basis for action in a particular situation. This knowledge and experience enable the commander to utilize the flexible organization with which he is provided to group his forces into task units most suitable for the accomplishment of his mission.

Set rules and methods must be avoided. They limit imagination and initiative which are so important in the successful prosecution of war. They provide the enemy a fixed pattern of operations which he can more easily counter.

It is a function of command to coordinate the tactics and technique of the various arms and services so as to develop in the forces employed on a given task the teamwork essential to success.

[A. G. 062.11 (1-9-41).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

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FIELD SERVICE REGULATIONS

OPERATIONS

(These regulations supersede FM 100-5, Tentative Field Service Regulations, Operations, October 1, 1939.)

CHAPTER 1

ORGANIZATION

TERRITORIAL ORGANIZATION

■ 1. The *theater of war* comprises those areas of land, sea, and air which are, or may become, directly involved in the conduct of war.

■ 2. A *theater of operations* is an area of the theater of war necessary for military operations and the administration and supply incident to military operations. The War Department designates one or more theaters of operations.

■ 3. A *combat zone* comprises that part of a theater of operations required for the active operations of the combatant forces.

It is divided into army, corps, and division areas, each comprising the zone of operations of the unit to which it pertains.

■ 4. A *communications zone* is that part of a theater of operations, contiguous to the combat zone, which contains the lines of communication, establishments for supply and evacuation, and other agencies required for the immediate support and maintenance of the field forces in the theater of operations.

■ 5. The *zone of the interior* comprises the area of the national territory exclusive of areas included in the theater of operations.

■ 6. The details of organization of the theater of war and its territorial subdivisions are given in FM 100-10, FM 100-15, and in instructions relative to mobilization published by the War Department. As indicated therein, definite territorial responsibilities are assigned to GHQ, theater commanders, and army commanders.

ORGANIZATION OF TROOPS

■ 7. Troop organization includes command, combat (tactical), and service (administrative) elements. Most tactical units contain service elements and have some administrative functions. But a unit is not designated as administrative unless it performs all or nearly all administrative functions for its components.

■ 8. The *field forces* consist of a general headquarters (GHQ), one or more armies, the GHQ air force, an armored force, and a GHQ reserve.

■ 9. The *GHQ air force* is composed of a headquarters and a variable number of squadrons and groups of combat aviation and various other types which may be organized into wings or larger commands. It also has air base organizations comprising troops of various arms and services for security and administration.

■ 10. An *armored force* is a combined force comprising elements transported in wheeled or track-laying type motor vehicles, the bulk of which is provided either with partial or complete armor.

■ 11. The *GHQ reserve* is composed of units of the various arms and services not otherwise specifically assigned which are held for use as reinforcements or for separate missions under GHQ.

■ 12. Several armies may be organized into a *group of armies* under a designated commander. Such a group is primarily a tactical command.

■ 13. An *army* is composed of a headquarters, certain organic army troops, a variable number of corps, and a variable number of divisions, of which some or all may be assigned from time to time to corps. The army is an administrative as well as tactical unit.

■ 14. A *corps* consists of a corps headquarters, certain organic corps troops, and such infantry (cavalry, armored) divisions as may be assigned to it. The corps is primarily a tactical unit.

■ 15. The *division* is the basic large unit of the combined arms. It comprises a headquarters, infantry (cavalry)

(armored) units, field artillery units, and certain troops of other arms and services. It is an administrative as well as a tactical unit.

■ 16. The term *large units* as used in this manual refers to divisions and larger units. A more detailed discussion of the larger units is found in FM 100-15.

■ 17. In each arm or service, the *company* (troop, battery) or similar unit is the basic administrative unit. It contains all the agencies required for subsistence, interior economy, and administration. For purposes of tactical control and training, each company is subdivided into smaller units.

■ 18. The *battalion* (squadron) or similar unit is the basic tactical unit. It is composed of a headquarters, two or more companies or similar units, and certain special units, organic and attached. Unless organized as a separate battalion it has few administrative functions.

■ 19. The *regiment* is both an administrative and a tactical unit. Ordinarily, it consists of a headquarters, a headquarters company and service company, either separate or combined, and two or more battalions or similar units. It may also include a company or similar unit in which certain special weapons and means are assembled for tactical purposes, economy, instruction, and administration.

■ 20. A *brigade* is ordinarily a tactical organization composed of two or more regiments of the same arm, together with a headquarters and headquarters company or similar unit. When organized as a separate brigade it may include units of other arms and services and may have administrative functions.

■ 21. For organization of the Air Corps, see paragraph 76.

■ 22. For economy and flexibility in the assignment to tasks, the means not habitually required by a unit are pooled and organically assigned to a higher unit. These means may then be allotted to subordinate units in accordance with their requirements for particular operations.

■ 23. To insure unity of effort or increase readiness for combat, part or all of the subordinate units of a command may be formed into one or more temporary tactical groupings (task forces), each under a designated commander. In

each, the unity of tactical organizations is preserved as far as practicable. In an infantry division, the term *combat team* is usually applied to a task force consisting of a regiment of infantry, a battalion of light artillery, and essential units of other arms in suitable proportion.

■ 24. The details of organization of the field forces and the amounts and kinds of transportation and major items of equipment are published in current War Department Tables of Organization and Tables of Basic Allowances. The organization of large units and pertinent technical and logistical data are given in FM 101-10.

CHAPTER 2

ARMS AND SERVICES

GENERAL

■ 25. The units comprising the field forces belong to the arms and the services.

The *arms* consist of the Infantry, the Cavalry, the Field Artillery, the Coast Artillery Corps, the Air Corps, the Corps of Engineers, and the Signal Corps. The Chemical Warfare Service also has combat units of chemical troops.

The *services* are charged with serving the line of the Army by performing the necessary functions of administration. For administrative functions of the arms and services, see FM 100-10.

■ 26. No one arm wins battles. The combined action of all arms and services is essential to success. The characteristics of each arm and service adapt it to the performance of its special function. The higher commander coordinates and directs the action of all, exploiting their powers to attain the ends sought.

INFANTRY

■ 27. The *Infantry* is essentially an arm of close combat. Its primary mission in the attack is to close with the enemy and destroy or capture him; in defense, to hold its position and repel the hostile attack.

■ 28. Infantry fights by combining fire, movement, and shock action. By fire, it inflicts losses on the enemy and neutralizes his combat power; by movement, it closes with the enemy and makes its fire more effective; by shock action, it completes the destruction of the enemy in close combat.

■ 29. Infantry is capable of limited independent action through the employment of its own weapons. Its offensive power decreases appreciably when its freedom of maneuver is limited or when it is confronted by an organized defensive position. Under these conditions or against a force of the combined arms, the limited firepower of Infantry must be adequately reinforced by the support of artillery, tanks, com-

bat aviation, and other arms. The defensive power of Infantry reaches a maximum when it occupies an organized defensive position or when the enemy's freedom of maneuver is restricted.

■ 30. The principal weapons of Infantry are the rifle and bayonet, the automatic rifle, and the machine gun. Other weapons include mortars, pistols, grenades, light antitank weapons, and antitank guns.

■ 31. Light antitank weapons and antitank guns are allotted to infantry regiments; antitank guns are the primary armament of antitank companies and battalions.

■ 32. The intrenching tool is an essential article of equipment of the infantry soldier. It is important in attack as well as in defense in order to hold ground without excessive casualties during interruptions of the advance.

■ 33. Infantry can maneuver on difficult ground. Its ability to move in small and inconspicuous formations enables it to take advantage of covered routes of approach and minor accidents of the terrain. It must utilize the terrain intelligently to attain maximum fire effect, to conserve personnel, to conceal movement, and to facilitate the maneuver and employment of reserves.

■ 34. The mobility of Infantry has been greatly increased by the use of motor transport for the movement of troops, equipment, and supplies. Infantry units completely motorized organically or by attachment are specially suited for the close support of mechanized units or for prompt dispatch as mobile reserves to distant areas accessible by road.

■ 35. Infantry troops, with equipment and supplies, may also be transported by aircraft to seize decisive objectives or to operate in the enemy's rear area.

CAVALRY

■ 36. *Cavalry* consists of highly mobile ground units, horse, motor, and mechanized. Horse units may be transported in trucks or semitrailers in order to increase their mobility or to conserve animals.

■ 37. Cavalry is characterized by a high degree of battlefield mobility. Its special value is derived from the rapidity and

ease with which its fire power can be moved from one position or locality to another. (See also ch. 15.)

■ 38. Cavalry is capable of offensive combat; exploitation and pursuit; seizing and holding important terrain until the arrival of the main forces; ground reconnaissance; ground counterreconnaissance (screening), both moving and stationary; security for the front, flanks, and rear of other forces on the march, at the halt, and in battle; delaying action; covering the retrograde movements of other forces; combat liaison between large units; acting as a mobile reserve for other forces; harassing action; and surprise action against designated objectives deep in hostile rear areas.

■ 39. Cavalry obtains its best results by the rapidity and flexibility of its methods in attack and defense rather than by the sustained offensive or defensive operations that are required of Infantry. Its missions should be selected accordingly. It should not ordinarily be employed against objectives which require the sustained power of Infantry. When no suitable or necessary missions exist for cavalry, it should be held in reserve, awaiting the opportunity for its use.

■ 40. Cavalry fights on a relatively broad front and in slight depth. In offensive combat, relatively weak forces may contain a less mobile enemy on the front while the principal forces strike in flank and rear.

■ 41. Cavalry executes missions of ground reconnaissance and security. In cooperation with the Air Corps, Cavalry locates the enemy, maintains contact with him, and procures essential information for the higher commander. Security missions include protection against ground attack and screening from ground observation.

■ 42. The efficiency of Cavalry depends in great measure upon the condition of its mounts and mechanized vehicles. Provision must be made for the rest and subsistence of animals and for the maintenance and upkeep of vehicles.

■ 43. *Horse cavalry* can operate over almost any terrain and under all conditions of weather. It is equipped with weapons similar to those of Infantry and has considerable fire power; it is provided with means for rapid signal communication, scout cars for reconnaissance, and motor transport for supply.

Horse cavalry habitually maneuvers mounted, but ordi-

narily fights on foot. As a rule, mounted maneuver is combined with dismounted action.

■ 44. *Mechanized reconnaissance units* are pushed well forward and to the flanks. They may be reinforced by armored or motorized units, heavy in fire power in order to delay or block hostile armored or motorized threats.

■ 45. The *cavalry regiment, horse and mechanized*, contains both porté horse units and mechanized reconnaissance units. Its primary mission is continuous ground reconnaissance. It may be used for any suitable cavalry mission. It should be reinforced when serious combat is anticipated.

■ 46. Cavalry may be attached to, or may be an organic part of, an infantry division; as such it is designated *division cavalry*. Its primary mission is continuous ground reconnaissance. Security and screening are secondary missions. It may be used for liaison during movement and combat.

FIELD ARTILLERY

■ 47. *Field Artillery* contributes to the action of the entire force through the fire support which it renders other arms. It has two principal missions in combat:

a. It supports infantry (cavalry) (armored) units by fire, neutralizing or destroying those targets which are most dangerous to the supported arms.

b. It gives depth to combat by counterbattery fire, by fire on hostile reserves, by restricting movement in rear areas, and by disrupting hostile command agencies.

■ 48. Artillery fire possesses great power of destruction and neutralization. It compels hostile troops in the open to adopt widely deployed formations and has great moral effect. Fire from curved trajectory weapons reaches objectives defiladed against flat trajectory weapons or lacking adequate overhead cover.

■ 49. Artillery fire possesses a high degree of *flexibility*. Field Artillery is capable of intervening over a zone of great width and depth, and of rapidly shifting and concentrating its fire without changing its positions. This characteristic makes it possible to concentrate the fire of large masses of Field Artillery under a common fire direction. Through the maneuver of artillery fire, commanders possess a powerful

means of influencing the course of combat. The efficiency with which artillery fires are maneuvered is dependent upon adequate control, close liaison with supported troops, sufficient observation, and dependable signal communication.

■ 50. In order to carry out its principal combat missions, division field artillery is ordinarily subdivided for combat so that certain units are assigned to the *direct support* of specified infantry (cavalry) (armored) units and the remainder is retained in *general support* of the division as a whole.

■ 51. The assignment of direct support missions to field artillery units insures close cooperation with the supported units and enables such artillery to act with greater promptness in meeting the requirements of a rapidly moving situation on the front of the supported units. A field artillery unit in direct support establishes liaison and signal communication with the supported unit and as far as possible executes the missions requested by the supported unit. Direct support artillery changes position when necessary to deliver the supporting fires requested, and to maintain close liaison with the supported unit.

■ 52. Whenever the situation permits, both direct support and general support artillery are retained under centralized control. Field Artillery operates most effectively in this manner. However, the division commander frequently cannot efficiently control the fire of all of his artillery because of the character of the operations, unusual extension of frontage, difficulties of terrain, lack of suitable observation, or insufficiency of signal communication. In such situations he should promptly attach artillery to the infantry (cavalry) (armored) units which it is to assist.

■ 53. Corps (army) field artillery may be retained under corps (army) control or part or all of it may be attached to divisions (corps). Units held under corps (army) control may be directed to furnish special assistance to designated divisions (corps).

■ 54. *Division artillery* is most effective in fire on unprotected personnel. Its principal mission is the support of infantry (cavalry) (armored) units. It is employed also to neutralize enemy observation, to interdict hostile movements, and to

assist corps artillery in counterbattery. It must be prepared to engage promptly hostile tanks within its field of fire.

■ 55. The *corps artillery* has for its principal mission the neutralization or destruction of the hostile artillery. It is also employed in the destruction of hostile defenses, in long range interdiction fire, and in reinforcing the fires of division artillery. Artillery observation units (sound and flash) are included in the corps artillery.

■ 56. The *army artillery* includes only a headquarters and such units as are allotted from time to time by GHQ and retained under the direct control of the army commander for support of the army as a whole. It has for its principal missions distant interdiction and destruction fire, and reinforcement of the fire of corps artillery.

■ 57. The *GHQ reserve artillery* includes artillery firing units of various classes and artillery observation units. These units are habitually allotted to armies for employment under the army commander or for reallocation to lower units.

■ 58. When occasion requires, particularly when there is a great massing of Field Artillery, temporary groupings of field artillery units may be formed for convenience in the execution of missions. These groupings are based upon the nature of the mission to be executed rather than upon type or caliber. Tactical unity is, as far as practicable, respected in the composition of groupings.

COAST ARTILLERY CORPS

■ 59. The *Coast Artillery Corps* is characterized by the great amount of fire it can deliver against naval and air targets. Its armament comprises fixed and mobile seacoast artillery, fixed and mobile antiaircraft artillery, and submarine mines.

■ 60. In the defense of coast lines the missions of the Coast Artillery Corps are—

a. In conjunction with the Air Corps and the Navy, to protect the fleet (or detachments) while at, entering, or debouching from its bases; to defeat naval and air attacks against harbor defenses, naval bases, cities, or other important areas.

b. To support (with mobile seacoast artillery and antiaircraft artillery) the Infantry and the other arms in beach defenses.

- 61. In field operations, mobile seacoast artillery may serve as army or GHQ reserve artillery.
- 62. *Seacoast artillery* has great power and range and is especially equipped and trained to fire at moving naval targets.
- 63. *Fixed seacoast artillery* is protected from naval and air attack by fortifications. Its stability permits great accuracy of fire. Its elaborate and precise fixed equipment permits highly effective fire control and fire direction. Seacoast artillery is organized into groups and groupments in order to develop the maximum fire power and provide efficient fire direction.
- 64. *Mobile seacoast artillery* comprises railway, truck-drawn, and tractor-drawn artillery. Off the battlefield, these types are capable of moving long distances at fairly rapid rates. On the battlefield their mobility is low and they require a considerable time for emplacement. Mobile seacoast artillery provides additional gunfire for existing harbor defenses and is used in conjunction with other forces to protect harbors or coastal areas for which no permanent defenses have been provided.
- 65. To combat hostile aircraft, *antiaircraft artillery* is equipped with antiaircraft guns, automatic weapons, searchlights, detectors, sound-locators, and the equipment required for observation, fire control, and signal communication.
- 66. *Mobile antiaircraft artillery* in conjunction with the Air Corps supports and protects the other arms against hostile air observation and attack (see par. 81). It reinforces the antiaircraft measures of other troops, protects the vital elements of a command, and in rear areas protects airdromes and other sensitive points. When distance precludes the centralized tactical control of antiaircraft artillery units, the commander of the force may attach antiaircraft units to subordinate elements of his command, or may detach units to protect vital installations. It is so equipped that it can execute antitank and other ground missions when necessary.
- 67. An essential agency of antiaircraft artillery is its *intelligence service*. This service gathers and transmits information of the enemy's air activities for use in connection with the employment of the antiaircraft artillery units. The *aircraft*

warning service also provides the antiaircraft artillery with information regarding hostile aircraft. Rapid interchange of information between these services is essential.

■ 68. Coordinated antiaircraft defense of areas is facilitated by the organization of commands for air defense.

AIR CORPS

■ 69. The *Air Corps* combats hostile aircraft, operates in conjunction with ground and naval forces in land and sea warfare, and conducts independent attacks against enemy objectives on land and sea.

■ 70. Air operations may be restricted by hostile air force operations, by antiaircraft measures, by the lack of air bases, and by adverse weather conditions.

■ 71. The mobility, speed, and range of aircraft make possible their rapid intervention at critical points in a theater of operations, rapid movements between widely separated theaters (subject to availability of bases and service and maintenance personnel), and deep incursions into enemy territory.

The operating range and firepower, including bomb load, vary inversely one with the other, depending as they do upon the distribution of the useful load between fuel and ammunition.

■ 72. Tactical missions of aviation include air attack against surface matériel and personnel objectives, air fighting against hostile aircraft, reconnaissance and observation, mapping, and transport.

■ 73. The term *combat aviation* refers to bombardment and pursuit aviation. The term *bombardment aviation* is applied to units whose primary function is the attack of surface objectives. The term *pursuit aviation* is applied to units whose primary function is air fighting.

■ 74. The term *reconnaissance aviation* is applied to units whose primary function is reconnaissance of distant objectives. The term *photographic aviation* is applied to units whose function is photographic reconnaissance and air mapping photography. The term *observation aviation* is applied to units whose primary functions are reconnaissance and observation of near objectives, observation of artillery fire, and maintaining contact between elements of our own ground

forces. Balloon units are included within the term observation aviation.

■ 75. *Transport aviation* is employed to transport Air Corps personnel, certain Air Corps supplies, special units of Infantry and other troops dispatched on distant missions in friendly or hostile territory and emergency supplies to fast-moving or isolated ground units.

■ 76. The basic administrative and tactical unit of the Air Corps is the squadron. The group, composed of two or more squadrons of a single class (such as bombardment or pursuit) of aviation, is the principal tactical unit and contains all the essential elements necessary for operation, maneuver, and combat. The next higher Air Corps unit is the wing which consists of two or more groups of either the same or different classes of aviation.

■ 77. Military aviation is assigned to the GHQ air force, to oversea departments, to corps and larger units, to the zone of the interior or important areas, or may be held in GHQ reserve. (See par. 11.)

The aviation organically assigned to corps and armies is generally limited to observation units.

■ 78. The operations of both surface and air forces are directed to the attainment of a common objective. Missions which do not contribute to the attainment of the common objective are avoided.

■ 79. In the hands of the higher commanders, combat aviation constitutes a powerful means for influencing battle. The hostile rear area may frequently be the most favorable zone of action for combat aviation, since operations in this area permit the full utilization of striking power against concentrated targets with minimum losses and maximum results. On the other hand, massed air attack in direct support of the ground troops will often be required to obtain quick and decisive results. By a careful estimate of each situation, the higher commander must determine *where* and in *what* strengths the combat aviation will be employed to assure the accomplishment of the mission.

Support by combat aviation is also required by mechanized and motorized units, particularly when operating beyond the range of friendly artillery. In all cases, the effectiveness of

air support of ground troops is dependent upon careful coordination, close cooperation, and rapid signal communication.

■ 80. GHQ may direct all or part of its combat aviation to support the ground units as a whole or to support particular ground units. In either case, the aviation operates to further the mission of the supported unit and receives its missions and objectives from the commander of the forces which it is supporting. When, however, the tactical situation makes it impracticable for aviation so controlled to render effective support, GHQ should unhesitatingly attach for definite operations part or all of the aviation to units of the ground forces.

For further discussion of the operations of the GHQ Air Force, see FM 100-15.

■ 81. Because of the speed and powers of evasion inherent in all aircraft, air fighting is generally of brief duration and the results are often indecisive. As a result, unless greatly superior, aviation is incapable of controlling the air in the same sense that surface forces can control an area and can therefore reduce hostile air operations only to a limited extent. The desired coordination of all antiaircraft defense measures in any large area is usually effected by the organization of a command for air defense. Operations of aircraft in defense of ground troops and installations must be coordinated with those of the antiaircraft artillery. This applies particularly to the employment of pursuit aviation which is designed primarily for defensive missions in the antiaircraft security of important areas and ground installations, and the protection of ground troops and their observation aviation beyond the range of antiaircraft artillery.

■ 82. Aircraft communicate with the ground by various means, including radio, drop and pick-up messages, sound and visual signals, and, in the case of the balloon, telephone.

■ 83. Air bases, suitably located, are essential for the operations of heavier-than-air aviation. (See FM 100-10.)

CORPS OF ENGINEERS

■ 84. The *Corps of Engineers* has the primary missions of construction and demolition to increase the combat effectiveness of troops, facilitate their movement, and hinder the movement of the enemy.

■ 85. Engineers increase the combat power of other arms by performing combat missions, by technical assistance in the construction of protective works and camouflage, and by the supply of necessary equipment requiring special equipment and training.

Combat engineers participate actively in the penetration of hostile obstacles and the capture of fortified localities, and in the defense of road blocks or mine fields. Engineers may be assigned the task of constructing rearward defensive positions.

Adequate and timely engineer support in the movement and operations of mechanized and motorized units is of special importance.

Engineers are attached to units of other arms when such units cannot otherwise be given adequate engineer support.

■ 86. Important engineer missions include the construction, improvement, and maintenance of routes of communication, including ferrying and bridging operations; the preparation of landing fields; and the elimination of obstacles to movement, including the demolition of permanent works and the destruction of mine fields and wire entanglements.

The mobility and maneuverability of the field forces and the efficiency of their supply depend largely on the successful execution of these missions.

■ 87. The mission of hindering enemy movement is often of equal importance. The inherent mobility of enemy motorized and mechanized forces must be countered by coordinated and intensive use of obstacles and demolition. Obstacles may consist of hastily erected barriers, such as road blocks and mine fields, as well as of deliberately prepared zones of obstacles.

■ 88. The engineers make, reproduce, and supply maps and map substitutes, including those produced from air photographs.

■ 89. Special engineer missions include camouflage, topographic work, water supply, railway operation, the operation of power plants, water and sewage systems and certain other utilities, and the supply and repair of engineer materials and equipment.

■ 90. For the classification and detailed operations of engineer troops, see FM 100-10.

SIGNAL CORPS

■ 91. Signal Corps troops have the primary combat mission of providing signal communication for the command to which they are assigned.

■ 92. Signal Corps troops assigned to divisions, corps, and armies comprise *construction units* for the installation of wire circuits; and *operating units* for the installation of wire centrals and radio stations, and the operation of message centers, messenger, wire, radio, and visual communication. In addition, Signal Corps troops assigned to field armies include units which provide *signal intelligence*, *photographic*, *pigeon*, *signal repair*, and *supply service*.

The Signal Corps provides message center, local messengers, and wire communication for headquarters, GHQ Air Force; headquarters all air force units down to include air wings, headquarters air bases, and for headquarters of air task forces.

The Signal Corps provides radio used solely for administrative purposes at headquarters, GHQ Air Force, air force headquarters of defense commands, and air base headquarters. The Signal Corps also installs and operates a signal supply establishment at each air base.

Signal Corps troops establish and operate the aircraft warning service in accordance with the instructions of the commander responsible for air defense measures.

The *signal intelligence service* is charged with the interception of enemy wire and radio transmission and the location, by radio position finding, of enemy radio transmitters operating on the ground and in airplanes. It is charged with the location of radio transmitters operating in violation of proclamations or orders, and with the interception of radio transmissions of friendly stations to detect violations of regulations governing the use of codes and ciphers and of radio procedure. The signal intelligence prepares and solves codes and ciphers.

■ 93. Wire (telephone, telegraph, and telegraph printer), radio, and messenger communication are the means of signal communication most frequently used. Other means of signal communication supplement and extend the service of these agencies.

■ 94. The Signal Corps exercises technical supervision over the entire signal service of the field forces. It supplies other arms and services with the technical equipment required for the installations of their own systems of signal communication.

CHEMICAL WARFARE SERVICE

■ 95. Troops of the *Chemical Warfare Service* engage directly in combat to assist other units of the field forces by the use of gas, smoke, and incendiaries.

■ 96. Chemical units are assigned to the GHQ reserve. They are attached to armies and lower units as the situation requires. They are profitably employed either in large units for large scale gas operations or in relatively small units for minor gas and smoke operations under division or lower unit control. A commander who attaches chemical units to units of the arms must restrict chemical operations so far as may be necessary to avoid interference by gas or smoke with the operations of other friendly troops.

CHAPTER 3

LEADERSHIP

■ 97. Leadership is based on knowledge of men.

■ 98. Man is the fundamental instrument in war; other instruments may change but he remains relatively constant. Unless his behavior and elemental attributes are understood, gross mistakes will be made in planning operations and in troop leading.

In the training of the individual soldier, the essential considerations are to integrate individuals into a group and to establish for that group a high standard of military conduct and performance of duty without destroying the initiative of the individual.

■ 99. War places a severe test on the physical endurance and moral stamina of the individual soldier. To perform his duties efficiently, he must not only be well equipped and technically trained but he must also be physically qualified to endure the hardships of field service and be constantly fortified by discipline based on high ideals of military conduct. Strong men, inculcated with a proper sense of duty, a conscious pride in their unit, and a feeling of mutual obligation to their comrades in the group, can dominate the demoralizing influences of battle far better than those imbued only with fear of punishment or disgrace.

■ 100. In spite of the advances in technology, the worth of the individual man is still decisive. The open order of combat accentuates his importance. Every individual must be trained to exploit a situation with energy and boldness and must be imbued with the idea that success will depend upon his initiative and action.

■ 101. The dispersion of troops in battle caused by the influence of modern weapons makes control more difficult. Cohesion within a unit is promoted by good leadership, discipline, pride in the accomplishments and reputation of the unit, and mutual confidence and comradeship among its members.

■ 102. Leading troops in combat, regardless of the echelon of command, calls for cool and thoughtful leaders with a strong feeling of the great responsibility imposed upon them. They must be resolute and self-reliant in their decisions, energetic and insistent in execution, and unperturbed by the fluctuations of combat.

■ 103. Troops are strongly influenced by the example and conduct of their leaders. A leader must have superior knowledge, will power, self-confidence, initiative, and disregard of self. Any show of fear or unwillingness to share danger is fatal to leadership. On the other hand, a bold and determined leader will carry his troops with him no matter how difficult the enterprise. Mutual confidence between the leader and his men is the surest basis of discipline. To gain this confidence, the leader must find the way to the hearts of his men. This he will do by acquiring an understanding of their thoughts and feelings, and by showing a constant concern for their comfort and welfare.

■ 104. A good commander avoids subjecting his troops to useless hardships; he guards against dissipating their combat strength in inconsequential actions or harassing them through faulty staff management. He keeps in close touch with all subordinate units by means of personal visits and observation. It is essential that he know from personal contact the mental, moral, and physical state of his troops, the conditions with which they are confronted, their accomplishments, their desires, and their needs.

■ 105. The commander should promptly extend recognition for services well done, lend help where help is needed, and give encouragement in adversity. Considerate to those whom he commands, he must be faithful and loyal to those who command him. A commander must live with his troops and share their dangers and privations as well as their joys and sorrows. By personal observation and experience he will then be able to judge their needs and combat value. A commander who unnecessarily taxes the endurance of his troops will only penalize himself. The proper expenditure of combat strength is in proportion to the objective to be attained. When necessary to the execution of the mission, the commander requires and receives from his unit the complete measure of sacrifice.

■ 106. A spirit of unselfish cooperation with their fellows is to be fostered among officers and men. The strong and the capable must encourage and lead the weak and less experienced. On such a foundation, a feeling of true comradeship will become firmly established and the full combat value of the troops will be made available to the higher commander.

■ 107. The combat value of a unit is determined in great measure by the soldierly qualities of its leaders and members and its will to fight. Outward marks of this combat value will be found in the set-up and appearance of the men, in the condition, care, and maintenance of the weapons and equipment, and in the readiness of the unit for action. Superior combat value will offset numerical inferiority. Superior leadership combined with superior combat value of troops constitutes a reliable basis for success in battle.

■ 108. A poorly trained unit is likely to fail in a critical moment due to demoralizing impressions caused by unexpected events in combat. This is particularly true in the first engagements of a unit. Therefore, training and discipline are of great importance. Every leader must take energetic action against indiscipline, panic, pillage, and other disruptive influences. Discipline is the main cohesive force that binds the members of a unit.

■ 109. A wise and capable commander will see that the men assigned to the component groups of his unit are compatible and that the composition of the groups is changed as little as possible. He will provide each group with a leader in whom its members have confidence. He will so regulate the interior administration of the unit that all groups perform the same amount of work and enjoy the same amount of leisure. He will see that demonstrated efficiency is promptly recognized and rewarded. He will set before all a high standard of military conduct and apply to all the same rules of discipline.

■ 110. Good morale and a sense of unity in a command cannot be improvised; they must be thoroughly planned and systematically promoted. They are born of just and fair treatment, a constant concern for the soldier's welfare, thorough training in basic duties, comradeship among men, and pride in self, organization, and country. The establishment

and maintenance of good morale are incumbent upon every commander and are marks of good leadership.

■ 111. The first demand in war is decisive action. Commanders inspire confidence in their subordinates by their decisive conduct and their ability to gain material advantage over the enemy. A reputation for failure in a leader destroys morale. The morale of a unit is that of its leader.

A commander must bear in mind that physical unfitness will undermine his efficiency. He owes it to the men under his command to conserve his own fitness. Neglect renders him unable to bring a normal mind to the solution of his problems, and reacts unfavorably on his whole command.

CHAPTER 4

THE EXERCISE OF COMMAND

DOCTRINES OF COMBAT

■ 112. The *ultimate objective* of all military operations is the destruction of the enemy's armed forces in battle. The ability to select objectives whose attainment contributes most decisively and quickly to the defeat of the hostile armed forces is one attribute of the able commander.

■ 113. Simple and direct plans and methods with prompt and thorough execution are often decisive in the attainment of success.

■ 114. Unity of command obtains that *unity of effort* which is essential to the decisive application of full combat power of the available forces. Unity of effort is furthered by full *cooperation* between elements of the command.

■ 115. Through offensive action a commander exercises his initiative, preserves his freedom of action, and imposes his will on the enemy. A defensive attitude may, however, be deliberately adopted as a temporary expedient while awaiting an opportunity for counteroffensive action, or for the purpose of economizing forces on a front where a decision is not sought. The selection by the commander of the right time and place for offensive action is a decisive factor in the success of the operation.

Numerical inferiority does not necessarily commit a command to a defensive attitude. Superior hostile numbers may be overcome through greater mobility, better armament and equipment, more effective fire, higher morale, and better leadership. Superior leadership often enables a numerically inferior force to be stronger at the point of decisive action.

A strategically defensive mission is frequently most effectively executed through offensive action. It is often necessary for an inferior force to strike at an early moment in order to secure initial advantages or to prevent itself from being overwhelmed by a growing superiority in the hostile forces.

■ 116. Concentration of superior forces, both on the ground and in the air, at the decisive place and time and their employment in a decisive direction, creates the conditions essential to victory. Such concentration requires strict economy in the strength of forces assigned to secondary missions. Detachments during combat are justifiable only when the execution of tasks assigned them contributes directly to success in the main battle.

■ 117. Surprise must be sought throughout the action by every means and by every echelon of command. It may be obtained by fire as well as by movement. Surprise is produced through measures which either deny information to the enemy, or positively deceive him, as to our dispositions, movements, and plans. Terrain which appears to impose great difficulties on operations may often be utilized to gain surprise. Surprise is furthered by variation in the means and methods employed in combat and by rapidity of execution.

Surprise often compensates for numerical inferiority of force.

Surprise finds the enemy in a state of mental, moral, or physical unpreparedness. Every effort should be made to deny him time to take effective countermeasures. The effect of surprise may be lost through dilatory methods of execution.

■ 118. To guard against surprise requires a correct estimate of enemy capabilities, adequate security measures, effective reconnaissance, and readiness for action of all units. Every unit takes the necessary measures for its own local ground and air security. Provision for the security of flanks and rear is of especial importance.

COMMAND

■ 119. Command is the authority which an individual in the military service lawfully exercises over subordinates by virtue of rank or assignment.

Command and leadership are inseparable. Whether the force is large or small, whether the functions of command are complex or simple, the commander must be the controlling head; his must be the master mind, and from him must flow the energy and the impulse which are to animate all under him.

■ 120. Decision as to a specific course of action is the responsibility of the commander alone. While he may accept advice and suggestions from any of his subordinates, he alone is responsible for what his unit does or fails to do.

■ 121. A willingness to accept responsibility is the foremost trait of leadership. Every individual from the highest commander to the lowest private must always remember that inaction and neglect of opportunities will warrant more severe censure than an error of judgment in the action taken. The criterion by which a commander judges the soundness of his own decision is whether it will further the intentions of the higher commander. Willingness to accept responsibility must not manifest itself in a disregard of orders on the basis of a mere probability of having a better knowledge of the situation than the higher commander. The subordinate unit is a part of a tactical team employed by the higher commander to accomplish a certain mission, and any independence on the part of a subordinate commander must conform to the general plan for the unit as a whole.

■ 122. The commander's mission is contained in the orders which he has received. Nevertheless, a commander of a subordinate unit cannot plead absence of orders or the non-receipt of orders as an excuse for inactivity in a situation where action on his part is essential, or where a change in the situation upon which the issued orders were based renders such orders impracticable or impossible of execution. If the situation does not permit communication with the superior commander and the subordinate commander is familiar with the general plan of operations or the mission of the whole command, he should take appropriate action and report the situation as early as practicable.

■ 123. The situations that confront a commander in war are of infinite variety. In spite of the most careful planning and anticipation, unexpected obstacles, frictions, and mistakes are common occurrences in battle. A commander must school himself to regard these events as commonplace and not permit them to frustrate him in the accomplishment of his mission.

■ 124. Personal conferences between the higher commander and his subordinates who are to execute his orders may at times be advisable, that the latter may arrive at a correct

understanding of the plans and intentions of their superior. Commanders do not justify their decisions to subordinates, nor do they seek the approval of subordinates for their actions.

■ 125. All the troops assigned to the execution of a distinct mission should be placed under one command, to function as a task force for the duration of the operation. So long as a commander can exercise effective command, he does not disturb the established chain of command in his force. In some situations, conditions dictate that attachments must be made to subordinate commands. Such attachments may be necessary in marches, during periods of development, in rapidly changing situations, or in the later stages of any action, and, in general, when better support or coordination can be effected.

■ 126. A commander who is advanced to a higher command should be relieved from the responsibility of direct command of his former unit.

ESTIMATE OF THE SITUATION

■ 127. In any tactical operation the commander must quickly evaluate all the available information bearing on his task, *estimate the situation*, and reach a decision.

■ 128. The commander's estimate of the situation is based on the mission of the unit, the means available to him and to the enemy, the conditions in his area of operations including terrain and weather, and the probable effects of various lines of action on future operations. (See FM 101-5.) On the basis of these factors he considers the lines of action open to him which, if successful, will accomplish his mission, and the lines of action of which the enemy is physically capable and which can interfere with such accomplishment. He analyzes the opposing lines of action, one against another, to arrive at conclusions as to the probability of success for each of his own lines of action. On the basis of this analysis he then considers the relative advantages and disadvantages of his own lines of action, and selects that line of action which most promises success regardless of what the enemy may do. If two or more lines of action appear equally promising, he chooses that one which will most favor future action.

■ 129. The estimate often requires rapid thinking, with consideration limited to essential factors. In campaign, exact conclusions concerning the enemy can seldom be drawn. To delay action in an emergency because of insufficient information shows a lack of energetic leadership, and may result in lost opportunities. The commander must take calculated risks.

■ 130. In considering the enemy's possible lines of action, the commander must guard against the unwarranted belief that he has discovered the enemy's intentions, and against ignoring other lines of action open to the enemy. Even when the weight of evidence warrants the belief that the enemy is committed to a definite line of action, the commander must bear in mind that a change in the enemy's plans may occur at any time.

■ 131. Because of their great mobility and rapid striking power, the capabilities of the opposing air and armored forces and the possible effect of their employment must be continually evaluated. In estimating the capabilities of air, armored, and motorized forces, both friendly and hostile, the commander must be provided with full and up-to-date information on the existing and probable future weather conditions and their effect, both ground and air, on employment of such forces.

■ 132. The estimate of the situation culminates in the decision. A decision once made is not changed without some compelling reason. In combat the will and energy of the commander must persist until the mission is accomplished. Estimation of the situation is, however, a continuous process, and changed conditions may, at any time, call for a new decision. Too stubborn an adherence to a previous decision may result in costly delay, loss of opportunity for decisive action, or outright failure.

TERRAIN

■ 133. That part of the commander's estimate dealing with *terrain* often exercises a decisive influence upon his decision and plan. Proper evaluation and utilization of the terrain reduce the disadvantage of incomplete information of the enemy. The more important features to be considered in evaluating terrain include not only natural ground forms such as mountains, ridges, streams, bodies of water, woods,

and open spaces, but also artificial features such as roads, railroads, and towns. The commander seeks always to utilize the terrain to his own advantage and to the enemy's disadvantage.

■ 134. While the mission of a force is the basic factor in the commander's estimate, this may frequently be resolved into terms of terrain. Thus, in the defense, it may be vital to hold certain dominating ground, or to protect a certain defile. Similarly, in the offense, success may hinge on the capture of such features which then become the immediate objective of the attack. Where possible, it is an aid to proper evaluation of the terrain to reduce the mission to terms of terrain.

■ 135. Maps are the basis for terrain studies, but should be checked by air reconnaissance, air photographs, and ground reconnaissance. Map errors must be expected. Moreover, changes in the terrain, especially in the road-net and drainage system, occur continually.

■ 136. *Terrain* can always be evaluated in terms of the following five factors: observation, fields of fire, concealment and cover, obstacles, and routes of communication.

a. Observation of the battlefield is essential in order to bring effective fire to bear upon the enemy, to control the maneuver of one's own troops, and to prevent surprise by the enemy. It is obtained from commanding elevations.

b. Fields of fire are essential to the defense. On the offensive, the commander seeks to make his main attack in areas lacking in good fields of fire to the defender. Best fields of fire are found in level or uniformly sloping stretches of open ground.

c. Concealment and cover may occur together. Concealment is protection against observation from the ground and air. Cover is protection against fire. The ideal defensive position is one having concealment and cover within but none in front of it. The attack is best favored by terrain affording good concealment throughout the depth of the advance. Concealment and cover, from ground weapons, are to be found in broken wooded terrain.

d. Obstacles are terrain features which impede the movement of military forces. They are of increasing importance in modern warfare where masses of mechanized units are employed. Although chiefly of advantage to the defense, they

may be of great importance in protecting the flanks of attacking units. Some of the common terrain obstacles are mountains, rivers, bodies of water, marshes, gullies, steep inclines, and extensive woods.

e. Routes of communication include roads, railroads, waterways and airways and their facilities. They are important in both offensive and defensive operations for the movement of troops and supplies. Troops in small bodies move across country readily, but in the operations of large bodies of troops, routes of communication are of vital importance.

■ 137. Features such as bridges, streams, woods, and towns divide practically all terrain into more or less separate areas. Such an area frequently consists of a valley lying between two ridges, or an open space between two woods. When the terrain features enclosing the area prevent direct fire and observation into it from positions outside, the area is called a *compartment*.

A compartment of which the longer axis extends in the direction of movement of a force, or leads toward or into a defensive position, is called a *corridor*. In general, a corridor favors the attack because it limits observation and direct fire from the flanks by the defender. From the standpoint of terrain, it is desirable that boundaries between tactical units in the attack should coincide generally with the boundaries of corridors in order that a single unit may control the terrain features from which direct fire can be brought to bear on troops within the corridor.

In the defense, boundaries are usually located within corridors. To assure unity of defensive dispositions, the boundary within the corridor should be so located as to include within the sector of a tactical unit of appropriate size avenues of approach to the position. To locate boundaries within an avenue of approach divides responsibility at critical areas.

A compartment which extends across the direction of movement of a force, or which extends parallel with a defensive front, is called a *cross-corridor*. Cross-corridors favor the defense. However, ridge lines perpendicular to the direction of advance permit an attacker to deal successively with elements of the hostile position. During the advance, these crests offer the attacker facilities for observation and fire, as well as shelter behind which he may reorganize his units.

- 138. See FM 101-5 for a detailed discussion of terrain.

CONDUCT IN BATTLE

■ 139. The commander's decision for his unit as a whole, and the missions to subordinate units in support of the decision, are communicated to subordinates by clear and concise orders, which gives them freedom of action appropriate to their professional knowledge, to the situation, to their dependability, and to the teamwork desired.

■ 140. After providing for the issuance of orders, the commander places himself where he can best control the course of action and exert his leadership. His command post affords the advantage of established signal communication. When opportunity offers and when his presence at the command post is not urgently required, he visits his subordinate commanders and his troops in order to inspire confidence and to assure himself that his orders are understood and properly executed.

■ 141. Whenever the commander leaves his command post, he should orient his staff as to further plans to be made or measures to be taken in anticipation of future contingencies, and should inform his staff where he can be reached.

■ 142. During the decisive phase of battle, the place of the commander is near the critical point of action.

■ 143. A commander influences the course of subsequent action by his leadership, by the use of his reserves, by the concentration of artillery and other supporting fires, and by the employment of combat aviation and armored units.

■ 144. The duration of a tactical operation can seldom be predicted. Successful engagements sometimes progress so slowly that the gains made are not immediately apparent. At other times, they progress so fast that the gains made can be capitalized only by the most aggressive and farsighted leadership.

Troops are used up rapidly in the decisive phases of combat. This attrition must be anticipated by the commander and his staff who take timely measures for replacement of men, units, transport, and weapons, and for replenishment of ammunition and other supplies. When the situation permits, troops which have been heavily engaged are rested and reorganized before being assigned a new and important mission.

STAFF

■ 145. The staff assists the commander, to the extent that he may require, by providing information, data, and advice; by preparing detailed plans and orders in accordance with his directions; and by exercising such supervision over the execution of his orders as he may prescribe. A staff officer, as such, does not exercise command.

■ 146. The staff may be divided into two groups—the *general staff* and the *special staff*. In large units these two staff groups are separate and distinct; in smaller units they merge into each other, and one staff officer frequently is charged with duties pertaining to both staff groups.

■ 147. In every headquarters there is a constant tendency to multiply personnel, expand the functions of staff administration, and accumulate records and office equipment. *The commander must avoid this expansion.* He must organize his headquarters so as to maintain its readiness for prompt movement.

■ 148. The organization, functions, and duties of the various sections of the staff and the employment and duties of liaison officers are prescribed in FM 101-5.

COMBAT ORDERS

■ 149. The authority to issue orders is an inherent function of command. Orders are normally issued to next subordinate commanders. Bypassing the normal channels of command is resorted to only in urgent situations; in such cases both the commander issuing and the commander receiving the order should notify intermediate commanders of its purport as soon as possible.

■ 150. Orders may be either complete or fragmentary.

The order is *complete* when it covers all essential aspects and phases of the operation. Complete orders include missions to all subordinate units charged with the execution of tactical operations in carrying out the commander's plan.

Fragmentary orders are used when speed in delivery and execution is imperative. Fragmentary orders are issued successively as the situation develops and decisions are made, and consist of separate instructions to one or more subordinate

units prescribing the part each is to play in the operation or in the separate phases thereof. This procedure will be usual in divisions and smaller units. Fragmentary orders may be either oral or written. They are concise but not at the expense of clarity and omission of essential information. Instructions issued in fragmentary orders may be repeated in a complete field order or in an annex if considered desirable.

■ 151. Orders should be originated sufficiently early and transmitted in such form as to permit subordinate commanders the maximum periods to reconnoiter, to estimate their own situations, to issue their orders, and to prepare their troops for the contemplated operation. Commanders should be alert to forestall delays in the successive dissemination of orders in their lower echelons.

■ 152. In many situations it may be necessary or desirable to issue an order to warn of impending operations (warning orders). A warning order contains information which enables subordinate commanders to make preparations for a contemplated operation. Its principal purpose is to gain time for preparatory measures and to conserve the energy of the troops.

■ 153. An order should not trespass upon the province of a subordinate. It should contain everything that the subordinate must know to carry out his mission, but nothing more.

■ 154. Orders must be clear and explicit and as brief as is consistent with clarity; short sentences are easily understood. *Clarity is more important than technique.* The more urgent the situation, the greater the need for conciseness in the order. Any statement of reasons for measures adopted should be limited to what is necessary to obtain intelligent cooperation from subordinates. Detailed instructions for a variety of contingencies, or prescriptions that are a matter of training, do not inspire confidence and have no place in an order. Trivial and meaningless expressions divide responsibility and lead to the adoption of half measures by subordinates. Exaggerated and bombastic phrases invite ridicule and weaken the force of an order. Expressions such as "attack vigorously," if used in orders, are not only verbose and meaningless, but tend to weaken the force of subsequent orders in which such expressions do not appear.

■ 155. Orders should prescribe only so far as conditions can be foreseen. Orders which attempt to regulate matters too far in the future result in frequent changes. Frequent changes in orders overload the means of signal communication, cause confusion and misunderstanding, impose needless hardships on the troops, and injure their morale.

Orders issued by subordinates should not be mere repetition of those from higher authority with additions of their own. New orders are clearer and more satisfactory.

■ 156. As a rule it is desirable to keep contemplated operations secret as long as possible and to confine knowledge thereof to a few staff officers and senior commanders. However, upon entry into action no unit should be in doubt as to what the commander wants it to do. Whenever knowledge of his intentions is necessary to insure the cooperation of the units engaged, a commander does not hesitate to disclose them to all concerned. Ignorance of his intentions may often lead to inactivity on the part of subordinates.

■ 157. It is impossible to prescribe detailed forms of orders to fit every tactical situation. To attempt to do so would result in a rigid form and a routine style of expression which would not be in accord with the tactical requirements presented by the diverse situations that arise in war. To the extent practicable, however, it has been found efficient and convenient to classify combat orders according to their purpose and scope and, for some of these, to adopt a standard sequence of composition. This makes for ease of understanding, the avoidance of omissions, and ready reference. Moreover, experience has shown that an order which can be misunderstood will be misunderstood and that, to obviate this danger, it is necessary to follow certain rules relating to the designations of boundaries, details of time and place, military terminology, abbreviations, designations of units, and the like. For details relating to these matters, see FM 101-5.

■ 158. *Annexes* may be issued to accompany combat orders, either for brevity, clarity, or simplicity—for example, maps, overlays, photographs, and sketches—or to amplify particular aspects of the operation, if the volume of detail is too great for inclusion in the order itself. The more mobile the operation, the less opportunity there will be for annexes. Where an annex has limited distribution, certain instructions

contained therein must be repeated in order to insure coordination.

■ 159. In every unit, *standing operating procedure* is prescribed by the commander whenever practicable. This procedure covers those features of operations which lend themselves to a definite or standardized procedure without loss of effectiveness. The adoption of such procedures will save time in the preparation and issuance of orders, minimize the chances for confusion and errors when under stress of combat, and greatly simplify and expedite the execution of operations in the field. (See FM 101-5.)

COMMAND POSTS

■ 160. For convenience of operation in campaign, the headquarters of a large unit is divided into a forward and a rear echelon. When desirable, headquarters of smaller units may be similarly divided.

The forward echelon consists of the staff agencies immediately required by the commander for assistance in tactical operations. The rear echelon consists of the remaining staff agencies which have administrative duties.

■ 161. The *command post* is the location of the forward echelon of a headquarters. All agencies of signal communication center at the command post.

■ 162. In the selection of a command post, consideration is given to the disposition of troops in the plan of operations, routes of communication, requirements of signal communication, space for staff activities, cover, and concealment. In the case of divisions and larger units, the presence of existing wire lines is important.

Remote location of a command post with respect to subordinate units places an unnecessary burden on the means of signal communication, delays the transmission of orders and information, and makes tactical control difficult.

Through the use of motor transport a command post can be moved quickly over a considerable distance. Frequent changes in the location of the command post are avoided, particularly in large units. In large units, before a change of location is made, the necessary means of signal communication for the new command post must be established.

■ 163. A commander must keep superior and subordinate units informed of the location and contemplated movement of his command post.

■ 164. Each large unit announces the location of its command post and, when practicable, the location of the command post of each of its major subordinate units. In rapidly moving situations, it may be necessary to direct subordinate units to select and report the locations of their own command posts. In closely coordinated operations requiring the movement of command posts, each large unit may designate its own axis of signal communication by naming the probable successive locations of its command post, so far as such locations can reasonably be foreseen, and may similarly assign an axis of signal communication to each of its major subordinate units.

■ 165. On the march, a command post may move by bounds along a designated route, or it may move at a designated place in a column.

■ 166. In combat, the location of command posts for small units in proximity to a good observation post, and for large units in proximity to a suitable landing field is desirable.

■ 167. The ability of mechanized units and parachute troops to strike quickly in rear areas indicates the necessity of locating command posts well forward, both in the offense and defense. A forward location assures a certain degree of all around protection by the combat troops; the command post will not so easily be cut off from the units it controls and the nerve center of the command is favorably located to meet rapidly changing situations.

■ 168. The maintenance of secrecy as to the location of command posts, particularly of large units, is of great importance. They are the special objectives of hostile airplanes, mechanized units, parachute troops, and cavalry. This threat makes it necessary not only to provide security against surprise attack from either the air or ground, but also to use great care not to disclose their locations to such troops. Concealment from the air is of major importance. Traffic in and out of command posts is rigidly controlled. Landing fields, dropping and pick-up grounds, and radio stations are placed at a distance. Signs to mark their locations and the

routes thereto are used sparingly—when the danger is great, not at all; in place of signs, guides are posted to point the way and messengers are given more precise instructions.

SIGNAL COMMUNICATION

■ 169. The efficient exercise of command and the prompt transmission of information and instructions require the establishment of reliable means of signal communication. Signal communication is effected by technical means and by messengers. Entire dependence cannot be placed upon any one means; alternate means must be provided. (See FM 24-5 and FM 11-5.)

■ 170. Every commander is responsible for the establishment and maintenance of the signal communication system of his unit and for its efficient operation as a part of the system of the next higher command. Signal communication systems must be simple, flexible, and properly used.

The establishment and maintenance of signal communication between superior and subordinate units is the responsibility of the superior commander; between adjacent units, as directed by their common superior. A unit supporting another by fire is responsible for the establishment and maintenance of signal communication with the supported unit.

■ 171. The various means of signal communication are so employed that they supplement each other. Those requiring great expenditure of effort and matériel are not installed when the service required can be effectively performed by less elaborate means.

■ 172. When headquarters are in movement, signal communication is maintained between and within columns by means of vehicular radio, airplanes, and motor or mounted messengers.

■ 173. The command posts and advance message centers are the control points in the initial installation of the signal communication system. Early information is given to the signal or communication officer of a unit relative to projected operations and the location and movement of command posts, in order to facilitate the prompt establishment of signal communication. The necessary instructions therefor are prepared by the unit signal or communication officer, in accord-

ance with the directions of the commander. Communication officers of higher units maintain close cooperation with the signal or communication officer of the subordinate unit.

■ 174. *Message centers* are operated at the command posts of all units down to and including battalions, and at the rear echelons of headquarters of large units, by the signal communication personnel of the command. Message centers assist the commander and staff by coordinating the transmission of outgoing orders, reports, and other messages with the available signal agencies, and by expediting the delivery of incoming messages. In general, the cryptographing and decryptographing of messages are the responsibility of the message center.

■ 175. *Advance message centers* are established whenever needed for the reception and relay of messages. Information as to their location is always transmitted to the troops.

Advance message centers are frequently employed in the reconnaissance operations of large units as collecting points for messages of several reconnaissance detachments.

■ 176. The message center is not responsible for those messages which are—

a. Transmitted directly by the writer to the addressee by telephone or personal agency.

b. Handled by the military or civil postal service.

c. Local messages between staff sections of the same headquarters located at the same place.

■ 177. The message center transmits messages in accordance with the classification as to urgency indicated by the writer. For classification of messages in accordance with the urgency of handling, see FM 101-10.

■ 178. The writer does not ordinarily designate the particular means by which a message is to be sent. If he desires a message transmitted by a particular means, he so marks it.

■ 179. Means of signal communication include wire, radio, visual and sound communication, pigeons, airplanes, and messengers.

■ 180. Wire communication (telephone, telegraph, and telegraph printer) constitutes the basic technical means of

signal communication for the infantry division and the larger unit headquarters. It will not, however, always be available for signal communication between forces operating at a considerable distance from each other, between troop units and the higher command on the march, and between the advanced troops and the rear in combat. Rapidly changing situations, such as a pursuit or retreat, restrict the practicability of its employment. The possibility of failure to function in critical situations must also be reckoned with. A wire system must, therefore, be supplemented by other means.

Although wire communication is a relatively safe means, there is always the possibility of hostile interception. When such interception is practicable it is inadvisable to employ wire communication for the transmission in clear text of plans which are not to be executed immediately.

■ 181. Radio communication is especially applicable in spanning distances between widely separated mobile forces, between ground and air, and in the fire-swept zone of the forward area. It is less vulnerable than wire communication to hostile fire, and is, therefore, a valuable supplement to wire systems in combat. It is subject, however, to static, to hostile interference, to interception, and to location by the enemy.

Interception of radio messages must be presumed. Discretion must be used even in the sending of messages in code or cipher. When prompt action is called for, the commander must decide whether the urgency of sending the message in the clear outweighs the value to the enemy of information contained therein. Radio transmission in the clear is justified in situations when the time available to the enemy is insufficient for exploitation of the information contained in the message.

During certain phases of operations, use of radio must be rigidly restricted or it may even be prohibited by higher commanders.

■ 182. Visual signal communication (lamps, flags, pyrotechnics, panels) is not suitable for long messages or over long distances but finds especial application for communicating within and between small units and with airplanes by a few short signals in accordance with a prearranged code. (See FTM 24-5.)

■ 183. Sound communication is used chiefly to spread an alarm, as a means to attract attention, and to transmit short, prearranged messages.

■ 184. Homing pigeons are a means of communicating from front to the rear when other means have failed.

■ 185. Airplane messengers may be employed when distance, intervening obstacles on the ground, or other factors of the situation prevent the use of other means, or when more rapid transmission is required than can be otherwise accomplished.

■ 186. Signal communication between airplanes and ground is accomplished by means of radio, visual signals, and drop and pick-up messages. In combat, dropping and pick-up grounds are established near unit command posts as required. On the march, they are established near the location of higher commanders and at points along the route of march. Dropping and pick-up grounds are identified by the display of panels. Moving vehicles designated to receive dropped messages are provided means by which they can be easily identified from the air. Airplanes in flight may be used to relay radio messages between ground forces.

■ 187. Sole reliance cannot be placed upon the technical means of signal communication. Their absence or failure to function does not relieve the commander of his responsibility of keeping higher, lower, and adjacent units informed of the situation. Each commander provides for the transmission of orders, information, and reports by means of messengers.

■ 188. Messengers are dispatched by the most efficient means of transport available. In hostile territory it may be advantageous to use airplanes or armored vehicles, or to provide an armed escort. In combat, mounted, bicycle, motorcycle, and motor messengers are employed as far forward as hostile fire and the terrain will permit. Runners are used in the more advanced units.

■ 189. For covering long distances, relays of messengers may become necessary. When relays are established, relay (connecting) posts are generally placed at well-marked points on the messenger routes.

■ 190. Important messages are often sent by two or more messengers, who travel separately. Officers are employed for

the transmission of important messages when explanation relative to the situation or additional information is required.

■ 191. The officer or noncommissioned officer dispatching a messenger gives him necessary instructions (destination, route, rate of movement, dangerous points to be avoided, place where he is to report after delivery of the message). This is of especial importance when secrecy precautions prevent the use of directional signs. (See par. 168.)

■ 192. Messengers have the right-of-way and must be given all practicable assistance. All commanders will assist messengers in expediting delivery of messages.

CHAPTER 5

INTELLIGENCE AND RECONNAISSANCE

GENERAL

■ 193. Information of the enemy and of the terrain over which operations are to be conducted must be evaluated to determine its probable accuracy, and, together with other items of information, it must be interpreted to determine its probable significance. It then becomes military intelligence.

■ 194. From adequate and timely military intelligence the commander is able to draw logical conclusions concerning enemy lines of action. Military intelligence is thus an essential factor in the estimate of the situation and in the conduct of subsequent operations.

■ 195. Military intelligence functions and procedure are covered in detail in FM 30- series.

INFORMATION COLLECTING AGENCIES

■ 196. The intelligence available initially concerning the enemy and the theater of operations is obtained from intelligence studies made in time of peace by the War Department and furnished the field forces prior to operations. This is supplemented by more detailed information obtained in the field from study of recent maps and map substitutes, captured documents and equipment, hostile and neutral press and radio; from interrogation of inhabitants, repatriates, prisoners, and deserters; from reports of agents, air and ground reconnaissance and observation, troops in contact with the enemy, aircraft warning service and special information services of component units; and from radio direction finding and other sources.

■ 197. Air reconnaissance extends the zone covered by ground reconnaissance and obtains information which will enable ground units to give effective direction to their reconnaissance. Photographs of the areas reconnoitered are of great value to both air and ground reconnaissance agencies.

Under favorable conditions, aviation can furnish early information of the enemy's general dispositions and movements to a considerable depth in rear of his security forces. It cannot provide continuous or detailed information, and frequently its negative information is unreliable, since it is subject to definite limitations resulting from inclement weather, darkness, forested terrain, antiaircraft fire, the activities of hostile combat aviation, and passive measures of antiaircraft defense.

Night visual and photographic reconnaissance by means of artificial illumination will detect heavy troop and vehicle movements. Reconnaissance flights made shortly after dawn and before dark offer a favorable opportunity for discovery of night movements.

■ 198. Ground reconnaissance elements, on the other hand, cannot obtain a complete picture of the enemy situation to any great depth in rear of the hostile screen. They need the cooperation of aviation in order to conserve their combat strength. They can maintain continuous contact, operate under weather conditions which preclude air reconnaissance, and can determine details of enemy activity, strength, composition, and combat value.

■ 199. Reconnaissance units of horse cavalry are of great value on reconnaissance missions because of their ability to execute detailed ground reconnaissance within an appropriate area.

■ 200. Mechanized reconnaissance units are of great value on distant reconnaissance missions, and for reconnoitering on an extensive front. (See FM 2-10, FM 2-15, and FM 17-10.)

■ 201. When cavalry divisions or adequate mechanized reconnaissance forces are not available, and the reconnaissance mission indicates the probability of serious combat or necessitates operations at a considerable distance from the main forces, a composite force consisting of available mechanized reconnaissance elements and either porté horse cavalry or motorized infantry may be desirable. Such a force may be reinforced by other arms.

■ 202. Close and intensive reconnaissance by infantry, artillery, and engineer units supplements the more distant recon-

naissance. Infantry reconnaissance assumes special importance when cavalry or mechanized reconnaissance units are lacking or weak. It is constant and intensive when the opposing forces are in contact and especially during combat.

Small engineer groups should constitute a portion of ground reconnaissance units to obtain and report information concerning routes of communication and movement and demolitions and obstructions.

ORGANIZATION OF RECONNAISSANCE

■ 203. The *essential elements of information* consist of that information of the enemy, of the terrain not under our control, of meteorological conditions in territory held by the enemy, or hydrographic conditions needed by a commander in a particular situation in order to make a sound decision, conduct a maneuver, and avoid being surprised. The essential elements of information constitute the basis for orders governing the search for information.

■ 204. In the combat zone the following items are usually included among the essential elements of information: what are the strength, composition and dispositions of the enemy; what lines of action, which can interfere with our mission, are within the physical capabilities of the enemy; when and under what circumstances can he put each into effect; and whether, when, and in what strength he can be reinforced. The essential elements also include unknown details of terrain which may affect our own maneuver. They may also include items of information desired by higher, lower, or neighboring units, and data as to suitable distant objectives for air or mechanized units and on meteorological conditions at or en route to such objectives.

■ 205. Ordinarily, the military intelligence required by the essential elements of information relating to the enemy are deduced from numerous items of information which serve as indications of enemy action. Reconnaissance agencies are directed to search primarily for these indications. According to circumstances, some or all of the following items of information will furnish indications of value: whether there are any enemy forces in a specified area at a particular time; the identification of the enemy's leading elements and the contour of his front line; the frontage and depth of his dis-

positions; his assembly positions; the location, size, and movement of his main forces or reserves; the location of his artillery; his measures for antiaircraft defense; the movement of supplies into or out of an area; the density of railroad traffic; entraining, detraining, entrucking, or detrucking; progress of construction and demolition; use of chemicals by the enemy; the location of his airdromes and landing fields, detraining stations, and principal supply and evacuation establishments; location and movements of enemy motorized and mechanized forces.

■ 206. The nearer the approach to the enemy, the more intensive is the reconnaissance. The most detailed information will be required concerning areas of importance in the contemplated maneuver. Detailed information of the terrain in the possible areas of combat is essential.

■ 207. Effective reconnaissance requires concentration of the available means on missions of importance. Depending on the situation, some reconnaissance elements may be held in reserve to reinforce the reconnaissance which is in progress, or to project reconnaissance in a new direction.

■ 208. The commander is responsible for all intelligence activities of his unit. He coordinates the activities of the reconnaissance agencies, avoiding duplication of effort by the assignment of missions and objectives and by informing each reconnaissance detachment of reconnaissances to be executed by others. He makes the necessary requests for information to higher and neighboring units.

The commander establishes zones of responsibility for air reconnaissance by designating air boundaries between his own aviation and that of the next subordinate units. Air reconnaissance must extend to such distances as to assure against surprise by hostile ground forces.

Orders for reconnaissance or observation should state definitely the information desired, where it is to be sought, and the destination and time of reports.

■ 209. Missions to aviation for the observation of specific roads, railroad centers, and exits of towns and woods must be stated in orders. These objectives are closely observed both day and night to discover the enemy's main forces and reinforcements, and their direction of movement.

■ 210. During combat, *observation aviation* reconnoiters and observes, in accordance with reconnaissance orders, within the reconnaissance zone of the unit to which it is assigned or attached; observes and adjusts fire for the Field Artillery; supports front line units by observing and reporting enemy assemblies which constitute an immediate threat, by locating opposing front lines, and by maintaining contact between units; and performs such missions within its capabilities as may be specially ordered by the commander. *Reconnaissance aviation* carries out long-range reconnaissance.

■ 211. Ground reconnaissance elements gain and maintain contact with the enemy, and, by working through gaps and around the flanks and rear, endeavor to ascertain the strength, movements, composition, and dispositions of the enemy's main force, and the approach of enemy reinforcements.

■ 212. Orders for the development of a command frequently assign zones of reconnaissance to subordinate units. Each unit is habitually responsible for reconnaissance within its zone of advance or action. Flank units are also responsible for reconnaissance on their open flanks.

■ 213. While orders for intelligence activities issued by a large unit may be included in an intelligence annex to a field order, it will usually be necessary to issue part or all of them in fragmentary form.

EXECUTION OF RECONNAISSANCE

■ 214. Reconnaissance is so executed that contact must be gained at the earliest practicable moment, and once gained must never be lost. The search for information must be unremitting. Reconnaissance is a responsibility of all units and is habitually directed to the front and to any open flank. As the situation requires, it is also directed to the rear.

■ 215. Ground forces assigned to reconnaissance missions secure information chiefly through the use of patrols. When, on account of hostile activities or the distance of objectives, patrols require close support in the execution of their mission, reconnaissance is executed by detachments which closely back up the action of patrols and furnish reliefs for patrol duty.

■ 216. Terrain features that afford observation of the hostile dispositions constitute especial objectives of reconnaissance. Active and aggressive action of patrols in seizing such terrain features is indicated.

■ 217. Weak reconnaissance elements seek to avoid combat unless it is necessary for gaining essential information. If the enemy is superior, the reconnaissance mission is often more easily accomplished by containing the enemy's reconnaissance or security forces in front while pushing reconnaissance around their flanks.

■ 218. Essential information can frequently be obtained only through attack. Reconnaissance units attack when their mission requires it.

■ 219. When hostile resistance is encountered which cannot be brushed aside or enveloped, a reconnaissance in force constitutes the best means of clearing up an uncertain situation. Troops engaged in a reconnaissance in force usually make a local attack with a limited objective. The commander who orders a reconnaissance in force must consider the possibility that his intentions or those of the higher commander may thereby be disclosed. He must also be prepared for the possibility that such reconnaissance may bring on a general engagement.

■ 220. Arrangements as to details of cooperation and direct signal communication between air and ground agencies must be made for each phase of operations. The commander of the aviation unit must be informed of the routes of advance of any ground units with which he must communicate, and the locations of command posts, advance message centers, intermediate dropping grounds, and temporary landing fields.

■ 221. Under the protection of the leading elements, the commander usually makes a personal reconnaissance for information of the terrain.

Reconnaissance parties are sent forward to determine the routes and covered areas available for the development of the command, the terrain, obstacles and barriers for antimechanized defense, gassed areas, defiles requiring antiaircraft protection, the location of position areas for the artillery and of covered assembly areas for infantry, cavalry and armored units, and the general location of the zone of resistance for

the organization of the defense or of a covering position to cover the development of the command.

■ 222. Without orders from the higher commander, each unit executes the reconnaissance necessary to its own operations within its own zone of action and toward any unsupported flanks. The methods of reconnaissance employed by the several arms are described in their respective field manuals.

TRANSMISSION OF INFORMATION

■ 223. All subordinates of a command are responsible that their immediate commander is promptly and fully informed of the situation.

■ 224. While a commander who is in need of information from other headquarters is responsible for requesting it, neighboring units should habitually exchange pertinent information regardless of whether such a request has been made.

■ 225. Items of information that appear unimportant to a collecting agency should be reported as they may be of significant importance to a higher commander when considered in conjunction with other information. Negative information is frequently important; likewise, confirmation that the situation during a specific period of time has remained unchanged. First contact with the enemy, and new identifications, are always reported by the most rapid means available. Other reports of reconnaissance are made as required in orders.

■ 226. Front line troops are frequently so closely engaged in combat that they are unable to report as often as desired by the higher commander. Commanders make provision for obtaining prompt information by special reconnaissance and by sending liaison agents to higher, subordinate, and adjacent units. These provisions do not relieve subordinate commanders from making every effort to keep their superiors fully informed of the situation.

■ 227. The best information will be of no use if it arrives too late at the headquarters for which it is intended.

■ 228. Important and urgent information, in addition to being transmitted to the next higher commander, is sent

by the most rapid means available to all headquarters affected, without regard to the usual military channels.

Artillery observers and liaison officers are often in a position to transmit to the higher commander over their own signal communication systems early reports of important combat events when such information might otherwise be delayed in transmission.

■ 229. The commander regulates signal communication to insure the prompt and reliable transmission of the results of reconnaissance. To facilitate the transmission of information between headquarters or units, he may establish advance message centers near the ground reconnaissance elements.

■ 230. During pauses in combat, or whenever the situation demands, subordinate commanders make brief intelligence reports to the next higher headquarters. Periodic reports are made as ordered by the higher commander.

■ 231. As required by the situation, military intelligence is disseminated to subordinate units in field orders, messages, or copies of periodic or special intelligence reports. The means of dissemination must be appropriate to the time available.

■ 232. For details regarding military intelligence methods and forms, see FM 30- series, and FM 101-5.

CHAPTER 6

SECURITY

GENERAL

■ 233. *Security* embraces all measures taken by a command to protect itself against annoyance, surprise, and observation by an enemy.

■ 234. The *primary mission* of a security detachment is to protect the command against surprise attack and observation by hostile air and ground forces, and to maintain freedom of maneuver for the command by gaining the time and space it requires to make the necessary dispositions. Forces assigned to security missions are secondarily charged with reconnaissance.

■ 235. Adequate and timely information is the *basis* of all security measures.

■ 236. *Security* and *reconnaissance* forces operate in accordance with different considerations. In general, security forces operate primarily with reference to the command to be secured; reconnaissance forces operate primarily with reference to the enemy.

■ 237. Each commander is *responsible* for the security of his command. This includes the protection of his lines of communication unless such protection is furnished by the higher commander. The superior commander prescribes security measures for the protection of the command as a whole or coordinates those adopted by subordinate commanders. Subordinate commanders provide such additional security as is required for their own local protection. The measures adopted are appropriate to the hostile threat. As the danger becomes greater, as, for example, when contact is imminent, security measures are increased.

■ 238. All security measures include an adequate *warning system* consisting of observers and the means of signal communication to warn promptly of hostile dispositions and operations on the ground and in the air. Special measures are taken to warn of the approach of hostile mechanized or air forces.

■ 239. Security detachments weaken the available forces of a command and in some situations constitute a partial commitment of the command to action. They are given sufficient strength to preserve the commander's freedom of action, and no more. In their composition, consideration is given to the desirability of preserving tactical unity. It is desirable that they possess mobility at least equal to that of the forces they are expected to oppose.

■ 240. In proximity to the enemy, an advancing force secures itself to the front by mobile reconnaissance elements sent out in advance of the command and by an advance guard.

■ 241. Depending upon the composition of the command, the *mobile reconnaissance elements* vary from armored units, cavalry, and aviation, in the case of large units, to small cavalry detachments, motorcyclists, or infantry in trucks, in the case of small units.

■ 242. The *advance guard* consists of a fraction of the command sent out on the route or routes of advance in front of the main body to protect it against surprise and observation, to clear the way by driving back weak enemy forces, removing obstacles, and repairing demolitions, and to secure for the main body the time and space required for its deployment for action in accordance with the plan of the commander. (For details, see ch. 8.)

■ 243. A command retiring in the presence of the enemy secures itself by a *rear guard*, a fraction of the command which follows the main body within the zone of retirement, usually by bounds, for the purpose of protecting it against hostile pursuit. (For details, see ch. 11.)

■ 244. An advancing force threatened in rear by hostile mobile forces also requires a *rear guard*. In the same way, a retiring force confronted with the danger of interception by hostile encircling forces requires an *advance guard*.

■ 245. In addition to its advance or rear guards, a command whose flanks are not protected by adjacent units will often find it necessary to detail *flank guards* to protect the exposed flanks. (See ch. 8.)

■ 246. A resting or defending force secures itself by an *out-post*, a fraction of the command disposed to cover its front,

flanks, and rear when the situation indicates, to protect it against surprise attack and observation by hostile ground forces. (For details, see ch. 7.)

■ 247. There is a similarity in the *formation* of advance, flank, and rear guards and outposts. Each comprises reconnaissance groups which send out patrols or post sentinels for observation. These reconnaissance groups are backed up by a support echelon, the principal element of resistance. In large security detachments, a reserve is provided. The reserve constitutes the principal maneuvering and reinforcing element for offensive or defensive action as determined by the mission of the security detachment, which mission in turn depends upon the plan for the subsequent employment of the command as a whole.

■ 248. An echelon of command which depends upon another for security to its front, flanks, or rear is responsible for maintaining contact with the unit upon which it depends. This is accomplished by means of liaison agents which it sends to the unit upon which it depends for the purpose of gaining information of the situation and by means of combat patrols which move between the two to assure connection.

■ 249. Reconnaissance and observation aviation, and in many situations combat aviation, is allotted in sufficient strength to supplement effectively the ground security forces. Combat aviation is particularly effective in providing security for fast moving and often isolated mechanized forces against hostile air and ground attack.

SECURITY AGAINST MECHANIZED FORCES

■ 250. *Terrain* and the road net influence the employment of mechanized forces. A map study, supplemented by air and ground reconnaissance, will disclose avenues of approach which may favor or impede mechanized operations. Reliance for protection against mechanized attack cannot be placed on terrain alone. When approaches are favorable, special measures are taken for antimechanized protection, especially by exposed march columns.

■ 251. Security against mechanized units requires an efficient *warning system*, which includes an intelligence and a signal communication system carefully coordinated to insure early

and continuing information of the presence and action of hostile mobile forces. Timely warning permits an increased readiness for action. Mechanized reconnaissance detachments operating well to the front and flanks are especially suitable for giving warning. All observation and reconnaissance agencies, both ground and air, are required to make an immediate report of a mechanized threat to the nearest commander. In addition to security measures adopted by a command as a whole, subordinate units conduct local reconnaissance to prevent surprise mechanized attack.

■ 252. The *means* for protection against mechanized attack are active and passive. The active means include antitank guns, artillery, combat aviation, antiaircraft artillery which is capable of firing at horizontal or minus elevations, tank units and armored divisions, chemicals, and individual weapons to the limit of their effectiveness. Passive means include reconnaissance, concealment, cover, natural and artificial obstacles, buildings, demolitions, antitank mines, and organized localities. Usually active and passive means are used in combination.

■ 253. Security against mechanized attack must be organized from two standpoints—the local protection of the troops and the protection of the command as a whole. The first is the mission of the antitank weapons organically assigned to lower units.

The second is the mission of the antitank units at the disposal of the higher commander. These units, because of their great mobility, are available for employment at a distance from the command or for concentration at the decisive locality. Mobile units capable of effective employment against mechanized forces are held for maneuver against hostile mechanized vehicles which succeed in breaking through. To insure the prompt transmission of information and orders to units, arrangements are made for rapid means of signal communication with them.

■ 254. The coordination of the means of antimechanized protection is a command responsibility. Commanders of subordinate units are given missions for antimechanized defense which are specific with respect to time, place, and purpose, and cooperation with other units, but which leave to them the details of execution. (See ch. 10.)

SECURITY AGAINST CHEMICALS

■ 255. It is the *responsibility* of each commander to take measures to provide security for his command against chemical agents.

■ 256. The *means* of providing security against chemical attack consist of an adequate warning system, the provision of individual and collective protective equipment, provision for the prompt decontamination of individuals, equipment, and supplies, and tactical measures which minimize the effects of chemical agents.

■ 257. An adequate *warning system* comprises reconnaissance to locate and define contaminated areas, gas sentinels, and an alarm system to alert the command when a chemical attack begins or impends.

■ 258. *Individual equipment* consists principally of gas masks and protective clothing. Men must be trained and disciplined in the use of this equipment. Failure in this respect results in excessive casualties and incurs the danger of panic.

■ 259. *Collective equipment* includes gasproof shelters, or protective covers for equipment and supplies, and decontaminating equipment and supplies. Gasproof shelters are provided in all permanent fortifications; their use in field fortifications increases with the elaboration of the field fortifications.

Prompt *decontamination* of individuals, equipment, supplies, and occupied areas reduces casualties and losses of equipment and supplies.

■ 260. *Tactical measures* include troop dispositions which take advantage, as far as practicable, of terrain unfavorable for gas concentrations and the avoidance or evacuation, to the extent possible, of gassed areas. Alternate positions for units and supporting weapons are selected in advance.

ANTI-AIRCRAFT SECURITY

■ 261. Regardless of the effectiveness of the security measures taken by the higher command through the offensive action of its combat aviation, all units must consider the probability of air attack and reconnaissance and provide appropriate security measures.

■ 262. Measures taken by ground troops for antiaircraft security vary with the situation, the degree of visibility, the concealment and cover offered by the terrain, and the capabilities of the enemy's aviation. Protective measures comprise *warning, concealment, dispersion, and fire.*

■ 263. The first requirement of antiaircraft security is an efficient *warning system.* Air guards are detailed by all units to give timely warning of the approach of hostile aviation. In addition, an aircraft warning service is, whenever practicable, organized within an area for the purpose of detecting and tracing movements of hostile air forces and transmitting warning of the approach and departure of such forces.

■ 264. Upon receiving an air alarm signal, troops in position, bivouac, or billets seek the nearest concealment or cover and remain motionless. In general, foot troops on the road take concealment or cover in adjacent ditches, depressions, or shadows. Motorized troops clear the center of the road, halt, and dismount. Horse elements seek protection by dispersal and the utilization of all available concealment and cover. When secrecy is not of paramount importance, all suitable weapons are employed against low flying aircraft.

When the situation indicates the necessity for continued movement and a command is subjected to frequent air attacks, maximum advantage is taken of dispersion and available concealment and cover without unduly delaying the movement. Troops must be prepared to accept some casualties rather than delay arrival at their destination at the appointed time.

■ 265. Measures taken for *concealment* aim to defeat both visual reconnaissance and air photography. Protective measures taken to defeat the camera will ordinarily deceive the eye of the air observer.

The presence and position of troops are disclosed to an air observer by movement, by regular formation or outline, by reflection of light, or by dust, smoke, or newly made tracks and intrenchments. All commanders are required to take appropriate countermeasures to prevent detection.

■ 266. Shadows cast by the sun early in the morning and late in the afternoon facilitate concealment. Ground haze or mist may constitute an effective screen against air ob-

servation. A low ceiling makes air reconnaissance dangerous for the air observer. During darkness, blackout frequently provides effective concealment.

Woods and villages afford concealment from air observation and reconnaissance; they serve to screen troops in shelter, in assembly, in position, and in movement.

Intrenchments and field works are visible from the air unless carefully sited and camouflaged. Protection is sought by the distribution of the defenses on the terrain and by their adaptation to concealment and cover such as buildings, brush, hedges, banks, ditches, and cuts.

■ 267. A command diminishes its vulnerability to air observation and attack by adopting *dispersed formations*. Dispersion in formation may be accomplished by increased width and depth of dispositions, by reduced density within columns or groups, and by increased speed in movement between successive terrain lines affording concealment or cover.

■ 268. The antiaircraft security of a column depends initially on the efficacy of the concealment in its last bivouac. During a movement, the important periods during which antiaircraft security must be provided are the formation of the march column, the passage of defiles or crossings en route, and the movement into shelter or assembly positions at the end of the march. During temporary halts, troops and vehicles clear the road and take full advantage of all nearby cover.

■ 269. At night, special precautions must be taken against reconnaissance by hostile aviation using flares. When a unit is illuminated it halts and remains motionless. No lights visible to air observers are permitted to be used by troops and vehicles.

■ 270. All units take measures for immediate protection against low-flying aircraft by using their own weapons which are suitable for *fire against aircraft*. All troops charged with this duty are constantly prepared for immediate action. Antiaircraft artillery reinforces the antiaircraft fire of other units and operates especially against aviation flying beyond the effective range of weapons of other arms.

■ 271. In the forward area of the combat zone, *antiaircraft artillery* protects the principal troop concentrations and

assembly positions, and covers the movement of troops through defiles and critical localities. Driving hostile aviation to higher altitudes decreases the effectiveness of air attack and observation. Since antiaircraft artillery will be handicapped in giving protection at night, additional dependence must be placed on passive measures supplemented by the fire of organic weapons of troops in position. (See pars. 421 and 633.)

■ 272. In the rear area, *antiaircraft artillery* cooperates with friendly aviation in protecting important establishments from air attack.

■ 273. The threat from troops transported by and landed from aircraft requires that special security measures be instituted against them. Responsibility for these measures extends down through all echelons of command, the measures adopted within each echelon being coordinated in such a way to provide a unified system over the entire danger area. In general, the security measures adopted are designed to gain early information, to attack incoming enemy transports by combat aviation and antiaircraft fire, to destroy parachute troops while in the act of landing or immediately afterward when they are most vulnerable, to obstruct all possible landing fields (airdromes, open fields, and straight stretches of level highway), and to isolate and destroy all landing forces by immediate attack before they can be resupplied and reinforced with supporting weapons. Defensive measures must not be reduced to routine; routine will assist the enemy in gaining surprise. (For details, see ch. 13 and FM 100-15.)

COUNTERRECONNAISSANCE

■ 274. *Counterreconnaissance* includes measures to screen a command from hostile observation. It is executed principally by aviation, antiaircraft artillery, cavalry, armored units, and security detachments. The commander coordinates the action of all of his counterreconnaissance agencies by assigning to each a mission in accord with its capabilities.

■ 275. Bombardment aviation contributes materially to counterreconnaissance by attacking hostile airdromes. Pursuit aviation, employed for counterreconnaissance on fronts where it is important to conceal our own activity from hostile

air reconnaissance, attacks all hostile aviation. Since complete elimination of hostile air reconnaissance cannot be expected, where secrecy is desired, ground forces must conceal their movements and dispositions.

■ 276. Combat aviation in counterreconnaissance is supplemented by antiaircraft artillery and the weapons of other units. Subject to the desirability of maintaining secrecy, all hostile aviation within range is fired upon to prevent observation. Before the fire of antiaircraft weapons is resorted to, consideration must be given to the fact that such fire may disclose the importance of the area being screened.

■ 277. Units assigned counterreconnaissance as their principal mission seek to defeat or neutralize hostile reconnaissance forces. In the execution of this mission, they operate offensively, defensively, or by delaying action, resorting to all forms of combat when necessary.

Offensive counterreconnaissance is most effectively executed by the defeat of the hostile reconnaissance forces. The activity of hostile patrols is most completely eliminated by the defeat of the stronger supporting detachments.

Defensive counterreconnaissance is most effective when the screen can be established behind an obstacle which must be crossed by hostile reconnaissance forces. Elements are employed to obtain information, attack advanced enemy detachments, or obstruct their operations.

When a broad front must be covered, it may be necessary to resort to delaying action to impede temporarily the operations of hostile reconnaissance forces.

Aviation assists counterreconnaissance by attacking hostile aviation attempting to cross the zone of counterreconnaissance and by reporting hostile ground movements, especially the approach of highly mobile units.

■ 278. The counterreconnaissance screen may be either moving or stationary. A moving screen is applicable to situations where the movement of a force must be screened; a stationary screen is used to screen the dispositions or concentration of troops or prevent the enemy from reconnoitering an area. (See ch. 15.)

COUNTERINTELLIGENCE

■ 279. The object of *counterintelligence* is to destroy the effectiveness of the enemy intelligence system.

Counterintelligence measures available to a command include secrecy; discipline; concealment; tactical measures designed to deceive the enemy; restrictions on the preparation, transmission, and use of documents; signal communication security; precautions in the movements of troops and individuals; regulation of the activities of newspaper correspondents, photographers, radio news commentators, and visitors; censorship; counterespionage, and counterpropaganda. (See FM 30-25.)

■ 280. It is imperative that all members of the military service realize that thoughtless or talkative persons may become a menace to their country and to the lives of their comrades. Officers, enlisted men, and civilian employees must not discuss military instructions, plans, operations, movements, or the composition or location of troops in the presence of civilians or other unknown persons. In making preparations for operations, it frequently will be advisable to take special precautions to maintain secrecy. Secrecy precautions must not jeopardize the success of operations by withholding information necessary to the forces involved.

■ 281. All members of the military service should understand that if they are captured the enemy will make every effort to obtain information from them. They will be instructed to give correctly their name, rank, and serial number, and maintain absolute silence when asked any other questions. Any other information given may prejudice the success of operations and endanger the lives of their comrades.

■ 282. Troops should make maximum use of natural and artificial concealment. Natural concealment and cover should be supplemented by camouflage. Since photographs frequently disclose things not visible to an observer's unaided eye, commanders should prevent the making of trails, tracks, or other telltale marks in the vicinity of any work. In general, it is useless to attempt to camouflage a position where work has already been begun which the enemy has had an opportunity to observe and register.

In general, troop movements in the combat zone should be

made under cover of darkness and with restrictions on the use of lights. If the enemy possesses a powerful air force, a blackout system must be employed. Under favorable conditions, smoke can be placed over restricted areas for limited periods of time to conceal information of great importance.

■ 283. A commander who is ingenious and resourceful in the use of tactical stratagems and ruses often will find methods of deceiving or misleading the enemy and of concealing his own intentions.

Feints, demonstrations, and simulated concentrations may be employed to mislead the enemy regarding the strength, time, or place of attack. The main attack may be accompanied or preceded by secondary attacks made in such a manner as to conceal the location of the main attack. A carefully screened withdrawal may be employed to deny the enemy the choice of the time and place of attack. Marches by day and return at night and the movement of empty truck columns have been employed to create the impression of great activity. Fake concentrations; simulated bivouacs, airdromes, and radio installations; dummy field fortifications, artillery positions, tanks, and airplanes; and many other such means have been successfully employed. It often is practicable to deceive the enemy regarding our plans and intentions by changing any routine procedure which may have come to his attention.

The dissemination of false information designed to deceive or mislead the enemy as to our intentions, capabilities, morale, or dispositions, such as, for example, the deliberate loss of orders or prisoners always introduces an element of danger because our own plans and decisions are apt to be influenced by the assumption that the enemy has been deceived. Such measures may be adopted only by the theater commander or by his authority.

■ 284. Counterreconnaissance is employed on fronts where it is especially important to conceal the disposition of troops from hostile investigation.

■ 285. Precautions are taken in the safeguarding and transmission of secret, confidential, and restricted documents. All orders, pamphlets, maps, diagrams, publications, or manuals and similar matter, except messages, originating in the theater of operations are classified as *restricted* unless given a

more restrictive classification. Military personnel in the front lines, on reconnaissance, or on missions over the enemy's lines, will not, under any circumstances, have in their possession any documents, except those absolutely necessary for the execution of their missions.

■ 286. Secrecy in the transmission of messages is of the utmost importance. Commanding officers are responsible for the maintenance of signal security within their commands. The signal intelligence service is responsible for the surveillance of friendly signal communication. The use of codes and ciphers is restricted to personnel specially trained in cryptography.

■ 287. Before leaving a camp, concentration area, rest area, bivouac, or any other assigned area in the theater of operation, troops will make a systematic search of the area to insure that no documents or other evidence of potential intelligence value to the enemy remain.

■ 288. The objects of censorship are to prevent information of military value from reaching the enemy, to insure that only accurate accounts of military activities are published or broadcast, and to maintain friendly relations with allied and neutral nations.

CHAPTER 7

HALTS AND SECURITY DURING HALTS

HALTS

■ 289. A halt after the completion of a march should be considered as much in the nature of preparation for the following operation as an opportunity for rest after marching. The bivouac area should be selected and the troops should be distributed in it to facilitate the succeeding operation. Security and comfort of troops influence the selection of the location for a halt.

■ 290. Considerations governing halts during a march are set forth in chapter 8.

SHELTER

■ 291. In the theater of operation, troops are sheltered in billets, bivouac, camp, or cantonment. (See FM 100-10.)

■ 292. The requirements of the situation and probable future action dictate the *distribution of troops in shelter areas*. Protection against air observation and air attack is sought by the selection of wooded areas and by the irregular distribution of units within the area.

■ 293. When contact with the enemy is remote, march considerations and comfort of the men govern dispositions for the halt. In large units, troops are sheltered as close to the route of march as practicable and are distributed in depth and in the order of march. Distribution in depth facilitates shelter and supply.

■ 294. When contact with the enemy is probable, tactical considerations govern the distribution of troops. Frontages are increased and units are echeloned in depth. Units incapable of self-defense against surprise attacks by hostile ground troops are quartered in protected areas or with troops equipped for defense. Trains are concealed in protected localities. Headquarters of regiments and higher units are concealed close to principal routes.

■ 295. When in close proximity to the enemy, combat requirements govern bivouacking.

During pauses in combat, troops rest in position on the ground held and secure their front and exposed flanks.

■ 296. The commander announces the shelter areas as soon as practicable. Quartering parties then proceed to their assigned areas. Countermarching by any unit to reach its shelter area must be avoided. Where practicable, unit commanders reconnoiter the area prior to the arrival of the unit.

OUTPOSTS

■ 297. An *outpost* is a security detachment to protect a resting command or a defensive position against annoyance, surprise, and observation by ground forces.

■ 298. The enemy capabilities and the decision of the commander relative to the location of the main body determine the location and nature of the outpost.

■ 299. A resting command provides outpost protection in all directions from which hostile forces may have access to the main body. The control of roads, of terrain features affording facilities for extended observation, and of observation points which would permit the enemy to direct the fire of long-range artillery on the main body is important. Measures for antimechanized and antiaircraft security and defense are stressed.

■ 300. Flank and rear security is provided by refusing the exposed flanks of the outpost position and by establishing detached posts on roads or at important observation points outside the sector covered by the outpost.

■ 301. The *strength and composition* of an outpost vary with the distance, mobility, armament, and attitude of the enemy; the terrain; the time of day; the size of the command to be secured; the degree of resistance the outpost is expected to offer; and the special duties assigned it. An outpost may comprise varying proportions of the combatant arms. It should be no stronger than is consistent with reasonable security. Economical protection is furnished by the use of patrols to keep close contact with the enemy, together with resisting detachments on the avenues of approach.

■ 302. In close terrain and during periods of darkness or low visibility, security forces are usually stronger and operate in closer proximity to the main body or defensive position.

■ 303. *Infantry* ordinarily constitutes the principal element of an outpost for a force of all arms. Its organic antitank weapons may be reinforced by the attachment of antitank units at the disposal of the higher commander.

Support of the outpost infantry is provided by the *artillery* with the main body or that assigned to the defense of the main position. If such support is impractical, artillery is attached to the outpost.

For the construction of obstacles, mine fields, and other barriers, *engineers* are attached to the outpost.

Cavalry, attached to the outpost, operates under orders of the outpost commander on reconnaissance missions, to maintain contact between adjacent units, and to establish detached posts at more distant points. Its use extends the zone of reconnaissance of an outpost. When not engaged actively, cavalry is withdrawn to a rear echelon of the outpost.

■ 304. The outpost of a large command is divided from rear to front into a *reserve*, *supports*, *outguards* and, when cavalry is attached, *outpost cavalry*. When important points to be secured lie outside the sectors of the supports, detached posts are established.

The general mission of the elements of an outpost is to gain time for the forces behind them. This mission governs their disposition.

Prominent points in rear of the outguards affording an extensive view over the foreground are used as observation posts.

■ 305. The missions of the *reserve* are to reinforce the troops in front, to counterattack, or, if the outpost has been given a delaying mission, to hold a rallying position. It is so located that it readily can reinforce the line of resistance, or, in delaying action, take up a position covering the retirement of the supports.

■ 306. The reserve sends out needed detachments. It maintains connection with supports and nearby detached posts. The reserve is instructed regarding its action in case of hostile attack.

■ 307. *Supports* constitute the principal echelon of resistance of the outpost. They provide their own security and the observation service of the outpost by establishing outguards and sending out patrols. They are placed at the more important points on or near the outpost line of resistance. A support is generally placed near a road. Each support is assigned a sector which is clearly defined by recognizable boundaries. Supports vary in strength from a platoon to a company. Machine guns and other supporting weapons are attached to supports as required. Supports are numbered consecutively from right to left.

■ 308. When supports are furnished from more than one battalion, a sector of the outpost position is assigned to each battalion furnishing the supports. Battalions assigned to sectors of the outpost position hold out their own reserves.

■ 309. An *outguard* varies in strength from four men to a platoon, depending on its location and the number of sentinels it is to furnish. Posts at a short distance from the support may be held by weak outguards while important posts at a considerable distance must be strongly held. Outguards are numbered consecutively from right to left in each support. (See FM 7-5 and FM 2-15.)

Outguards must be ready for action at all times. When in close contact with the hostile outpost, the establishment of listening posts at night in front of the general line of observation is advisable.

■ 310. *Sentinels* are charged with the observation of a portion of the foreground of the outpost position, with the discovery of hostile activity, and with giving alarm in case of attack. Sentinels at the post of the support and outguards repeat the signals given by advanced sentinels.

The duties of sentinels are prescribed definitely in special orders.

■ 311. Outposts conduct reconnaissance only so far as required by their security mission. The execution of more distant reconnaissance is regulated by the higher commander.

■ 312. The field of view held under observation by sentinels is extended by *patrols*. Patrols execute reconnaissances in advance of the line of sentinels and reconnoiter positions of the foreground which are masked from view of sentinels and

observation points and are too distant to be included in the outpost lines. (See FM 21-45 or FM 7-5.)

■ 313. Patrolling in front of the line of observation is increased during periods of low visibility and during the hour preceding dawn.

When outposts of opposing forces are in close contact, reconnaissance is largely restricted to night patrolling. Night patrolling requires systematic organization, careful preparation, and the coordination of advanced outpost elements with the activity of the patrols.

■ 314. Within the outpost position patrols maintain contact with advanced elements and with adjacent supports and outguards and reconnoiter between sentinel posts. Patrols may be used to maintain contact with detached posts.

■ 315. During an advance, the outpost established at halts usually is furnished by the advance guard. A new advance guard usually is designated when the movement is resumed. The outpost ordinarily stands relieved when the support of the advance guard passes the outpost line of resistance.

■ 316. During a retreat, the outpost usually furnishes the rear guard, a new outpost being posted from the main body when the command completes the day's march.

When the command remains stationary for a prolonged period, the outpost ordinarily is relieved at intervals of several days.

■ 317. The *halt order* of the commander of the troops assigns locations to the elements of the command, designates the position to be held in case of attack, and contains instructions relative to security. This order either provides for an outpost under centralized control by naming the outpost commander and detailing the outpost troops or it requires column commanders to organize outposts for their commands. In either situation, the commander of troops designates an outpost line of resistance, important areas to be held, and the limits of the front to be covered by the outpost system. He indicates what action the outpost is to take if it is attacked in force, outlines special reconnaissance to be executed, indicates the approaches which are to be especially guarded, and regulates the signal communication to be established between adjacent

outposts. He may direct the establishment of detached posts by the main body or by the outpost commander.

■ 318. Upon receipt of orders to establish the outpost, the outpost commander promptly makes his dispositions under the protection of march outposts established by the advance, flank, or rear guards. In proximity to the enemy, his initial orders insure the prompt execution of the most urgent measures to meet a hostile attack. These measures include the occupation of commanding terrain, reconnaissance, construction of obstacles, and preparation for the defense of the outpost position. Details and rectification of preliminary dispositions are regulated by subsequent instructions.

When battalions (squadrons) are assigned to sectors of the outpost position, the outpost commander issues his orders for the occupation of the outpost line to the sector commanders. The sector commander fixes the distribution of troops within his sector; assigns to each support its location and the area it is to cover; prescribes the location and disposition of the reserve and its conduct in case of attack; provides for the necessary detached posts and connection with adjacent troops; issues instructions for organization of the ground, signal communication, antiaircraft, antimechanized, and gas defense. He prescribes the disposition of trains and gives the location of his command post.

■ 319. After issuing the initial orders, the outpost commander inspects and coordinates the dispositions of the supports, completes his arrangements, and reports his dispositions to his superior. He prescribes the degree of readiness for action of the elements of the outpost.

■ 320. The sector or support commander seeks to protect his sector so that the enemy, in dangerous numbers, cannot reach his section of the outpost line of resistance unobserved. Elements within supports are deployed in frontage and depth as for the defensive except that intervals are considerably greater.

Each defensive area on the line of resistance is organized to command an adequate field of fire to the front and to sweep with fire the intervals between it and adjacent areas. Road blocks and obstacles are prepared for defense against mechanized attack.

■ 321. When the support is posted, the support commander inspects, rectifies defects, and reports his dispositions, preferably accompanied by a sketch, to his immediate superior. He indicates the areas not effectively covered by the fire of weapons at his disposal and where the fire of artillery supporting the outpost is desired. He renders subsequent reports covering additional developments, embodying information collected by his patrols. He maintains connection with adjacent supports and keeps them informed.

The support commander prescribes the degree of readiness for action of the support. Greater vigilance is required during fog and toward dawn. Under these conditions it may be necessary to cause the entire support to stand to arms and to draw in the outguards closer to the support. At night, it will sometimes be advisable to move the outguards from day positions. Where an outpost occupies a position for a considerable length of time in close proximity to the enemy, provision must be made for frequent change in the position of outguards to avoid capture by hostile raiding parties.

■ 322. In occupying their positions and during relief, the various subdivisions of the outpost conceal their movements against both ground and air observation. They prepare their positions for defense unless the situation renders such action unnecessary.

CAVALRY AND MECHANIZED OUTPOSTS

■ 323. *Cavalry and motorized or armored* units secure themselves by far-reaching reconnaissance and by depth of their dispositions in the bivouac area. When at a distance from the enemy and not protected by other troops, they send out security detachments (companies or troops, platoons) to hold critical points on the routes of approach from the front, flanks, and rear. These detachments preferably are posted along some protective terrain line that the enemy will be forced to pass in his advance (defiles, streams, crossings) and provide for their own security by posting outguards and sending out patrols. Additional outguards are posted near the main body.

■ 324. In close proximity to the enemy, security measures approach a more continuous outpost organization. When the security troops occupy an extensive front, outpost sectors are assigned to the various security detachments. When neces-

sary, portions of the main body are held in readiness for immediate action. The mobility of a motorized or mechanized unit permits its outpost to bivouac at some distance from the main body. The number of vehicles with the outpost is the minimum necessary for patrolling and signal communication. Vehicles of the resting units are serviced and made ready for operation. Motor parks are established in protected, concealed areas located to avoid congestion and to expedite departure.

■ 325. In immediate proximity to the enemy, the outpost organization conforms to the general procedure for an outpost of all arms. Horses or personnel carriers are sent to the rearward echelons of the outpost. When there is danger of attack, increased readiness for action is obtained for outguards and supports by holding animals saddled and ready for movement.

SECURITY MEASURES WITHIN SHELTER AREAS

■ 326. To provide local security in any shelter area, the commander establishes an *interior guard*. This guard is charged with giving warning in case of gas attack or approach of hostile aircraft or ground troops, and with the enforcement of regulations governing such matters as traffic control, police, use of lights, and circulation of civilians.

■ 327. Concealment in shelter areas is of primary importance. Effective camouflage is stressed. Traffic is strictly controlled. Vehicles are concealed or are camouflaged and parked irregularly. Only those lights are allowed that cannot be seen by hostile observers on the ground or in the air.

■ 328. Antitank detachments are posted to cover routes of approach by mechanized vehicles. Antiaircraft weapons are sited to provide defense against air attack.

■ 329. In hostile territory, interior guards are made stronger. Guards for bridges and railway stations, searching parties for enemy wire and radio installations, holding of hostages, closing roads to civilian traffic, and other special security measures often are necessary.

■ 330. At each headquarters and in each company or similar unit, one officer, and in each platoon, one noncommissioned

officer are constantly on duty to alert the command in case of attack.

■ 331. The area commander designates a rallying position and the route thereto for each subordinate unit. Intermin-gling or crossing of units is avoided.

■ 332. To alert all the troops, the alarm is sounded. If the area commander decides to alert only certain troops, he noti-fies them by telephone or messengers.

When alerted, each unit forms on its assembly place, reports its readiness to the commander, and awaits orders. In an alert, quiet and order are maintained. Each man must know where to go and what to do.

■ 333. On the approach of hostile aviation, the interior guard sounds the alarm if danger is imminent. All troops take the prescribed antiaircraft measures.

CHAPTER 8

TROOP MOVEMENTS

GENERAL

■ 334. Troop movements are made by marching, by motor transport, by rail, by water, by air, and by various combinations of these methods. The method to be employed depends upon the situation, the size and composition of the unit to be moved, the distance to be covered, the urgency of execution, the condition of the troops, and the availability, suitability, and capacity of the different means of transportation.

■ 335. For the organization of systems of transportation and circulation and control of traffic in the theater of operations, see FM 100-10.

■ 336. For technical and logistical data pertaining to troop movements, see FM 101-10.

■ 337. In the *combat zone*, troop movements generally are executed by marching or by a combination of marching and movement by motor transport. Motor transportation is employed extensively to increase the mobility of foot troops and conserve their strength. Air transportation is used for the movement of troops for special purposes.

■ 338. A *successful march* places troops at their destination at the proper time and in effective condition for combat. It is the task of commanders to reconcile the conflicting requirements of rapidity of movement and conservation of fighting power.

■ 339. The ability of a command to achieve decisive results on the battlefield depends in large measure upon the marching capacity of the troops. While mechanical means of transport are employed extensively for troop movements, sustained mobility on or near the battlefield requires that all troops be thoroughly conditioned to march exertions; therefore, from the first days of training, advantage is taken of every opportunity to perfect troops in marching.

■ 340. Special attention to the care of troops and the means of transportation is essential to successful marching. Commanders take the necessary measures prior to a march to place men, animals, and transportation in the best possible condition and exercise the necessary supervision during and after the march to maintain them in that condition. Troops are not kept in column or under arms any longer than necessary. Full use is made of available transportation to carry the rolls of troops and the equipment and loads of animals in need of relief.

■ 341. Care is exercised to prevent men from obtaining unwholesome food and beverages and from indulging in excessive eating and drinking. Men are encouraged to drink all the water they need before starting a march; they are cautioned to drink sparingly during the course of the march. All water for drinking and cooking purposes is chlorinated unless it is procured from a source found to be safe by the medical service. Commanders make the necessary arrangements for refilling canteens in accordance with anticipated needs. They permit no straggling from the column for this purpose. For details of march hygiene, see FM 21-10.

■ 342. *Hot weather* is one of the greatest sources of hardship on a march. Places for halts are, when practicable, selected where there are shade and free circulation of air. Special attention is given to the supply of water and water discipline before, during, and after the march. Fatigue and heat exhaustion can be minimized by the consumption of common table salt. Cold coffee or tea is likewise beneficial.

If animals are watered insufficiently they rapidly lose condition. The times of watering must be regulated in accordance with march conditions and available facilities.

■ 343. The hardships caused by *cold weather* are mitigated by proper precautions and suitable winter clothing. Ears, eyes, face, and hands must be protected.

Mounted troops stimulate circulation by dismounting and leading. Foot troops sling their weapons to free their arms.

Snow and ice greatly reduce the rate of march. To equalize the exertion of breaking the way, leading elements of a column are frequently changed. In deep snow, it may be necessary to break the way for foot troops with a snow plow, tractor, or similar device. (See ch. 12.)

SHUTTLING

■ 344. The ability of a command to concentrate superior forces quickly at the decisive place and time will often depend largely upon its skill in the use of its organic motor transportation. The movement of a unit in two or more trips using the same vehicles is called *shuttling*. Whether the normal loads of motor vehicles are advanced before or after the foot troops depends upon the nature of these loads and the tactical situation. The amount of organic transportation which prudently can be diverted from its normal purpose to move foot troops depends upon the degree of readiness for combat required by all or part of the command, the supply requirements, the hazard of immobilizing essential loads at a critical time, and the consequence of possible disorganization of the command by enemy action. Except for vehicles issued for the movement of active weapons such as prime movers or weapons carriers, all trucks of any unit are considered as a pool of transportation to be used as required.

■ 345. The distance moved by shuttling is largely dependent upon the time required to complete the movement, the enemy's capabilities to interfere with the movement, and the cover and terrain suitable for the assembly, detrucking, and deployment of the main body. The time required to complete the move is affected by the number and condition of roads; distance between entrucking and detrucking areas; vehicular speed maintained; number of trips required; time-length of columns; delay caused by enemy interference or other obstructions; the time-lag between the issuance of orders and the beginning of execution; and the time consumed in loading and unloading personnel and equipment and in turn-arounds.

■ 346. In the execution of movements by shuttling, a commander divides his command into tactical groupings which are moved successively either by furnishing them with additional transportation obtained either from higher echelons or from units whose movement is deferred, or by initially organizing each group so that it has the transport means to move itself in two or more shuttles.

Each contingent should be a well-balanced force. Its composition depends on the tactical mission. As far as practi-

cable, each tactical grouping is composed of the same units. They should include the tactical units (combat teams) normally associated in combat.

■ 347. Movement by marching and by shuttling may be combined. Foot troops may march from the initial point while awaiting their transportation, or may be detrucked short of their destination.

■ 348. Preparations for and the conduct of movements by shuttling are greatly facilitated by the adoption of standing operating procedures. Otherwise the plans and orders for such movements are so time-consuming in their preparation as to nullify the potential mobility of the command.

■ 349. When combat is in prospect, special attention is given to the protection of the detrucking area, to the composition of the first shuttle, and to the security of the zone of movement between the separated elements of the command.

TACTICAL CONSIDERATIONS

■ 350. The factors which exercise the greatest influence upon dispositions for marching are the composition and proximity of the hostile ground forces and the activity of hostile aviation. Distance no longer gives to armies the same degree of protection and freedom of action as in the past. When the hostile forces include mechanized elements, contact with such elements should be expected from any directions not protected by friendly forces or terrain barriers.

When contact with enemy ground forces is remote, the principal object of march dispositions is to facilitate and expedite the movement of troops and to conserve their energy. Commanders make use of the available motor transportation for moving foot troops. As far as practicable, columns are composed of units having the same rate of movement. Separate roads are assigned to columns having different rates of movement, or their movements by the same road are echeloned in time.

When contact with the enemy is probable, tactical considerations govern march dispositions. Columns are constituted in accordance with their tactical missions. Adequate provision is made for security.

Service troops, kitchens, and baggage trains may be held in a protected area and moved forward under cover of darkness.

■ 351. A large unit advancing against the enemy is assigned either successive objectives or a direction of movement, and either a zone or routes of movement.

A large unit whose zone of movement includes several routes assigns routes or zones to its component units in accordance with its plan of maneuver.

■ 352. *When the enemy main forces are distant*, a large unit usually moves in a broad and deep formation in order to retain the power of maneuver and to achieve the rapidity of movement essential to the initiative. Reconnaissance troops reconnoiter the assigned zone of reconnaissance and gain contact with the hostile forces. Security against motorized and mechanized forces is provided in the zone of reconnaissance by the successive seizure of road centers and natural terrain lines through the aggressive action of mobile detachments operating well to the front and on unsupported flanks. To the extent permitted by the tactical situation, movements are made at night or by infiltration by small groups during daylight.

■ 353. *With the closer approach to the enemy*, the zone of reconnaissance becomes less extensive and less time is available to prepare for action. Readiness for combat requires a diminution in the depth of the formation. Columns are constituted in accordance with tactical missions.

■ 354. Commanders dispose their tactical groupings so as to permit flexibility of maneuver and readiness for deployment in the direction of the enemy.

A *formation in depth* provides maximum flexibility of maneuver but delays deployment. It is the easiest of all formations to control, enables the commander to exert the maximum influence in coordinating the action of the forces initially engaged, and assures the availability of units intended for maneuver.

A *formation in width* increases readiness for deployment in the direction of movement. Maneuverability is restricted, especially after gaining contact. Changes of direction are difficult.

A formation in which columns are echeloned to a flank facilitates maneuver and deployment to that flank and retains to varying degrees the advantages and disadvantages of both linear and columnar formations.

The commander's movement order prescribes the time and place of departure of his columns so as to produce the desired formation and includes such instructions pertaining to *subsequent* coordination as can be foreseen.

Movements may be controlled by prescribing the hour when the head of the main body of the respective columns will continue the advance beyond the designated terrain (phase) lines. These intermediate objectives may be prescribed in the order or during the movement. Column commanders report promptly when these objectives are reached and at other designated times. The imminence of contact with strong forces prepared for battle, the probable inequality in progress of the several columns, and suitable terrain affording concealment and cover and tactical advantages largely determine the length of bounds.

Control of the movement may also be obtained without the designation of phase lines. Under this procedure, subordinates furnish periodic position reports and the commander issues his orders during the movement.

■ 355. When contact with strong forces prepared for battle is imminent, the commander assures himself of continued possession of terrain suitable for subsequent maneuver and prepares his command for combat. He coordinates further advance by prescribing terrain lines that will be seized by the advance guards while the main bodies of the respective columns are suitably disposed for combat within supporting distance. After a march has begun, variations in echelonment are regulated by halting certain columns or by changing the duration of their rest periods.

■ 356. In an advance, *commanders and their staff parties* are well forward. The commander goes where he best can control the operation, usually with his principal column or with the column along which the axis of signal communication is being established. Ordinarily, the commander and his staff party move by bounds to successive locations where messages may be received and sent. He may be accompanied by one or more of his principal subordinate commanders.

■ 357. *Signal communication* between columns and with the superior commander is regulated ordinarily by standing procedure, supplemented as necessary by special instructions. Ordinarily the means employed are motorcycle messenger and vehicular radio. Liaison airplanes may be used to maintain contact between columns and to report their arrival at successive march objectives. Full use is made of existing commercial signal communications systems.

■ 358. A column comprises its security detachments, the main body, and the trains. The formation and movement of each of these groupings are regulated by a designated commander in accordance with instructions of the column commander. Distance between the groupings is regulated by the column commander.

The maintenance of roads and the removal of obstacles require the presence of an engineer unit with the advance guard or near the head of each principal column.

■ 359. The *order of march* of a column of all arms advancing against the enemy is dependent upon the terrain, the tactical situation, the mission of the column, and the relative mobility of the component units.

The order of march of security detachments ordinarily is prescribed by their respective commanders. The column commander prescribes the order of march of the main body.

■ 360. When contact with the enemy is possible, the order of march of a column composed of elements of approximately equal mobility is adapted to the requirements of security and to the probable order of entry of units into action.

Artillery is placed within the column so as to insure its protection but primarily to insure its availability for early and adequate support of the security forces and the initial action of the main body.

Antitank weapons must be so disposed and employed as to provide protection to the moving column. Antitank weapons are attached to security detachments.

Motor vehicles required in the exercise of command and control of the column ordinarily advance by bounds in the interval between the main body and the security detachment. Other motor elements pertaining to staff parties march at the head of their units.

Trains are so placed in the column as to be available to their units when required. Trains not immediately required may be held in protected areas in rear and sent forward when the situation permits.

■ 361. Orders for troop movements must be issued sufficiently in advance to permit preparation by the troops. For items to be included in a march order, see FM 101-5.

■ 362. The *routes should be reconnoitered* and marked prior to the commencement of the march. Timely measures are taken for preparation of stream crossings and for the removal of obstacles and other possible causes of delay.

Careful examination is made of fords, bridges, and ice before attempting a stream crossing.

■ 363. *Cross-country marches* usually will be necessary in the development and approach march preliminary to battle, or in the extension of a command for the purpose of diminishing its vulnerability to air attack. Overextension in depth is avoided by increasing the number of columns on the front of advance.

In difficult terrain, foot and mounted troops constitute the elements of a command most capable of cross-country movement.

■ 364. With the approach of a column to close contact with strong hostile forces, it becomes necessary to abandon the road and to *develop* the route column into a broader formation. The development of a large command is expedited by an advance in several columns. The area where development starts ordinarily depends upon the effectiveness of the enemy's artillery fire. As a rule, time can be saved and losses avoided by detouring isolated areas under hostile observation or fire rather than by starting early development.

■ 365. The *development* of the column is effected by breaking the single column into several roughly parallel columns, each of which is assigned a march objective. As contact with the enemy becomes imminent, these columns themselves are developed into smaller columns.

Time is generally gained in the execution of the development by assigning the longest routes to the leading units of the column.

■ 366. The result of the complete development of the command is to distribute the troops in accordance with the commander's plan of action.

The development of a division usually terminates in the occupation of *assembly positions* by front line units preliminary to deployment for attack or defense.

■ 367. Assembly positions are so selected as to be, as far as practicable, screened from air and ground observation and reconnaissance. Terrain which provides turn-arounds for motor vehicles and natural protection against a mechanized attack is desirable. The position should be such that the troops have at their disposal favorable lines of advance to their combat positions. When the terrain does not afford concealment, the assembly position of a division in daylight should be beyond the effective range of hostile artillery. The assembly position is protected by antitank weapons and local security detachments. The artillery is so disposed that it can protect the occupation of the assembly position.

■ 368. Massing of units in close formation in assembly positions is avoided. Units are separated by sufficient intervals and distances to insure that concentrated targets are not offered to hostile air attack or artillery fire. Each unit makes its own provisions for local security.

■ 369. When a command executes its *development under cover of darkness*, all preparations for the maneuver are completed, as far as practicable, before dark. A covering force is sent forward without delay to gain contact with the enemy; routes of advance are reconnoitered and marked; if necessary, artillery protects the occupation of the assembly position by occupying suitable firing positions before dark or completing its preparations for night firing. In general the provisions for night marches apply.

■ 370. *Night marches* often are required to obtain concealment from air and ground observation and security from air attack. They may be made for the purpose of avoiding excessive heat.

When troops are being concentrated by night marches, movement before dark except by small detachments and single vehicles should be prohibited and daybreak should find the troops either in position or in concealed localities.

■ 371. Night marches must be carefully prepared. Prior reconnaissance of routes and assembly areas is important. Special precautions are taken to insure the maintenance of direction and connection within the column. Guides are furnished whenever practicable. Routes are marked at points where a wrong road might be taken. Numerous connecting groups are provided.

On good roads, foot and mounted troops usually can maintain the same rate of march as for a day march. On poor roads, on very dark nights, or in unfavorable weather the rate of march is considerably reduced. Motorized units reduce their speed at night.

■ 372. *When concealment is sought* during night marches, measures to avoid disclosure must be rigidly enforced. Such measures may include prohibiting or shading of lights; instructions to halt or to clear the road when illuminated by flares; rapid bounds by motor and mounted elements between successive areas of concealment; prohibiting smoking and visible fires; silencing all radios; and when near the enemy, the maintenance of silence by personnel and so far as practicable the suppression of noises made by vehicles, motors, and equipment.

■ 373. *Forced marches* impair the fighting power of troops and are undertaken only in cases of necessity. The completion of the march must find the troops in condition to accomplish the object of the movement. Requirements for increased rates of march are met, wherever practicable, by the use of motor transportation.

The length of marches of foot and mounted troops is increased by increasing the number of marching hours per day rather than by increasing the hourly rate of march. The march may be broken into short stretches by halts of several hours' duration. A long forced march practically becomes a succession of daily marches of greater average length with shorter intervals of rest.

MARCH TECHNIQUE

■ 374. In each arm and service, movement is based upon a *march unit* which moves and halts at the command or signal of its commander. In foot and mounted units, the battalion

or squadron constitutes the march unit. In motorized and mechanized units, the march unit will ordinarily be composed of a number of vehicles easily controlled by one commander; the company, troop, or battery, or exceptionally the battalion, is the most satisfactory march unit. Small separate units may be constituted as march units or attached to march units.

In each march unit, the order of march of the several component units is normally changed daily. Rotation in the order of the march of larger units may also be ordered when permitted by the situation.

■ 375. Distances between march units and between elements within march units are prescribed for each march in accordance with the situation.

Irregularities in the rate of march in columns composed of foot or mounted troops are absorbed as far as practicable within the space between march units. In motor columns, irregularities are absorbed between vehicles.

■ 376. A march column is formed by the successive arrival of its component units at an *initial point* located in the direction of march. It should be inconspicuous to hostile air observation and easy to identify on the ground.

■ 377. Initial points and the hour at which the heads of columns pass and the tails of columns clear the initial points are stated in the march order or in a march table accompanying it.

When a large unit marches in several columns, the march order may fix an initial point for each column, or designate an initial line to be reached or cleared at a prescribed hour by a specified element of each column. When an initial line is designated, each column commander fixes an initial point and hours of passage in such manner as to pass the initial line as prescribed in the orders of the higher commander.

■ 378. Commanders of subordinate units of a column consider the route to be followed in reaching the initial point, calculate the time required, and start their commands so that there will be neither delay nor unnecessary waiting at the initial point or elsewhere.

■ 379. When several elements of a command marching by different routes are to join on a single road or when their

routes of march cross each other, arrival at or clearing of the point of junction is so timed as to prevent interference between columns.

When an unforeseen crossing of two columns occurs and no control personnel of a superior headquarters is present, the senior commander regulates the crossing, basing his action on the situation and the missions of the two columns.

■ 380. The hour to be fixed for the start of the march depends upon the situation, the length of the march, and the hour at which the troops must arrive at their destination.

■ 381. The *rates and lengths of march* vary with the situation, weather, time of day, character of the roads, condition of the troops, nature of the terrain, and the obstacles that must be overcome. Average rates and lengths of march are given in FM 101-10.

The elongation of a column varies with speed of movement, road conditions, weather, condition of the troops, and the march dispositions adopted for antiaircraft protection.

In each march unit, the leading element under the direction of its commanding officer regulates the rate of march in accordance with instructions issued for the march.

■ 382. *Motor columns* may move in open or close column formation at prescribed rates or by infiltration at high speed. (See FM 25-10.)

■ 383. Ordinarily, troops keep to the right of the road, leaving the left free for passage of other traffic along the column. On muddy, sandy, or dusty roads, or when both sides of the road provide concealment from air observation, or when attack by hostile combat aviation is probable, troops may be directed to march on both sides of the road; the middle of the road is kept clear for other traffic.

■ 384. *Rest periods during a march* are a necessity and are habitually taken at regular intervals to rest men and animals, to service vehicles, to adjust equipment, and for other purposes. Halts generally are regulated by standing procedure. Unit commanders are promptly notified of the time and approximate length of any halts not provided for in the march order.

■ 385. After the first halt, which usually lasts 15 minutes, columns containing foot elements halt 10 minutes each hour; mounted troops halt from 5 to 10 minutes each hour. The halts of motor columns are made every 2 or 3 hours and are regulated with reference to the location of facilities for servicing vehicles and making adjustments.

Each march unit of foot troops halts and resumes marching simultaneously; each march unit of mounted, motorized, or armored troops may halt and resume marching simultaneously or successively. At the signal for the halt, units bear to the side of the road and troops fall out or dismount to rest. The road must be left clear by units at a halt.

Shortly before the termination of the halt, the commander of each march unit gives the preparatory signal for the resumption of the march. Foot troops fall in, mounted men remount, drivers resume their seats. Each unit moves out at the signal of its unit commander.

■ 386. It is desirable to finish the day's march early. However, the length of the march or the desirability of avoiding excessive midday heat may render it advantageous to make a long halt toward the middle of the day.

At long halts, each unit or group moves to a previously reconnoitered location in proximity to the route of march. Mounted units are located near sources of water supply.

■ 387. Men are not permitted to fall out during the march or to leave the immediate vicinity of their unit during halts without the specific authority of an officer of their unit. An officer marches at the tail of each march unit. He is charged with keeping the unit closed up and with preventing *straggling*. He examines men who fall out on account of sickness or sore feet. He gives them a written note to the surgeon or requires them to continue the march.

A small guard marches at the tail of each regiment and separate unit to control stragglers not admitted to the medical vehicle by the surgeon.

A detachment of military police marches in rear of the combat troops of a division. It arrests men found absent from their units without authority and, except in cases of men apprehended for serious offenses, turns them over to their units at the first opportunity with a statement of the circumstances of their apprehension. For organization and duties of military police, see FM 29-5.

■ 388. One of the medical officers attached to a troop unit marches at the tail of the unit. He examines men authorized to await his passage. He admits them to the medical vehicle or authorizes them to place arms and equipment (in whole or in part) on that vehicle or other transportation provided for that purpose, or directs them to report to the guard at the tail of the regiment. One or more medical vehicles march at the tail of each regiment and similar unit for the transportation of men who become sick or disabled.

For details concerning collection and evacuation of casualties, see FM 100-10.

■ 389. A vehicle which is compelled to halt moves off to one side of the road. Disabled vehicles are promptly removed from the road.

■ 390. Assemblies from march columns occur incident to long halts, occupation of assembly positions during development for combat, entrucking and detrucking, and for other purposes. The column commander selects the assembly area in accordance with the situation or instructions received. He allots portions of the area to component elements according to the situation and probable future action. Whenever practicable, arrangements for the occupation of the area are based upon detailed reconnaissance.

■ 391. Assembly areas may be announced in the initial march orders or during the course of the movement. In either case, subsequent arrangements are greatly facilitated by having representatives of the major units march near the head of the column. The column commander announces the location of his command post and indicates to the representatives of the major units their respective areas in sufficient detail to prevent congestion and delay in clearing the roads. These representatives, after reconnoitering their respective areas and routes thereto, meet their units and conduct them to their assembly areas.

Provision is made for traffic control and security. (See FM 25-10 and ch. 6.)

Roads are promptly cleared. This is expedited and wear and tear on motor vehicles are reduced by preparing turn-outs at places where motor columns leave the roads. For this purpose, motorized engineers equipped with tractor-bulldozers are especially useful.

■ 392. Special precautions are taken to avoid congestion and delay during the *passage of obstacles and defiles*. Provision is made promptly for antiaircraft protection. The massing of troops, especially in the vicinity of an obstacle or defile, is to be avoided.

■ 393. *Fordable streams* are reconnoitered, and provisions are made in advance for avoiding confusion and unnecessary delay at crossings to include the regaining of distances and the preparation of additional crossings.

When a road leads through swamps or quicksand or across a stream with treacherous bottom, the limits of the road are marked or warnings are placed at dangerous points.

■ 394. The engineer officer in charge of a *bridge* is responsible for its structural adequacy and the regulation of traffic on the bridge and its approaches. Instructions issued by the engineer officer and the engineer bridge guard relative to the use of the bridge are strictly obeyed.

March commanders are responsible that vehicles exceeding the maximum load capacity of the bridge are cut out of the column for crossing at some other bridge or by ferry.

■ 395. Foot troops crossing bridges march without cadence. In crossing on a ponton bridge, mounted men lead their animals in column of twos; pairs of draft animals in front of the wheel pair are led; motor vehicles travel slowly, holding to the center of the bridge and maintaining the distance prescribed by the engineer officer.

■ 396. In case of an air attack during a crossing, all commanders of units en route to the bridge halt their troops to prevent jamming at the bridge approaches. Troops on the bridge and its approaches are evacuated as directed by the engineer officer in charge.

■ 397. In *ferrying foot troops* by assault boats, individual ponton boats, ponton rafts, or other means, troops first are brought to assembly areas under cover in the vicinity of the embarkation point. Here they are organized into tactical groupings corresponding to the capacity of the means for ferrying. Engineer equipment needed for the crossing but not already at the river, such as assault boats or foot bridge equipment, is issued to troops at the final assembly area where instructions for embarking and disembarking and for con-

duct during the crossing are given. At the proper time, each tactical grouping is conducted by an engineer guide to the point of embarkation. Movement from the final assembly area to the river is under control of the engineer troops.

On arrival at the embarkation point, troops enter the boat or raft in the manner directed by the engineer in charge. The engineer in charge is responsible for the arrangement of the loads and the handling of the boats. Individual equipment is loosened so that it may be removed easily.

■ 398. Vehicles may be ferried on a standard ponton raft ferry, or on an existing or improvised ferry. Vehicles awaiting passage are held under cover at a point where they will not block the approaches. Vehicles are loaded as directed by the engineer officer in charge. They usually are secured by brakes and blocking. Horses may be crossed by swimming. In unloading, the debarkation point is cleared promptly.

MOVEMENTS BY RAIL

■ 399. The general organization, operation, and control of rail transportation are discussed in FM 100-10.

■ 400. The larger aspects of rail movements are covered in FM 100-15.

■ 401. The time required by a unit to prepare for a rail movement, assemble at entraining stations, load equipment, clear entraining stations, unload equipment and re-form or redistribute its forces in the detraining area determines the minimum distance over which troops can be moved more rapidly by rail than by marching. The time required for the transfer by rail of an infantry division from one area to another can seldom be reckoned at less than 4 days; rail movement will seldom be more rapid than marching for distances less than 150 miles. For distances less than 150 miles, it is generally expedient to move an entire infantry division by marching or by a combination of marching and rail or motor transportation; smaller units may be moved by rail over shorter distances.

■ 402. In order that they may make timely preparations for a movement by rail, units are given timely notification of impending movements.

■ 403. Orders directing the movement of a unit by rail generally designate the stations at which the entrainment of the unit will take place, indicate the number of trains and the hours of departure, and state the detraining area or destination of the movement; the detraining stations may also be designated when these are definitely known and considerations of secrecy do not oppose. The movement is, however, frequently directed to a regulating station from which the several units are routed to detraining stations.

■ 404. In conjunction with a representative of the railway transportation service, the commander of the troops prepares a table regulating the entrainment and departure of the various elements of his command. The services of qualified commercial railroad employees should be utilized to the maximum in planning troop movements by rail.

■ 405. The order in which troops of a division or other unit are dispatched varies with the situation.

When the movement is carried out in connection with the execution of a tactical mission, tactical considerations influence the priority in which the troops are moved. In movements which merely involve the transfer of a unit from one quartering area to another, the order of movement is influenced chiefly by considerations of administration and convenience.

Command elements, antiaircraft and ground security forces, signal communication troops, military police, medical, and engineer units generally are placed early on the schedule of movement.

Unit trains usually move with their units.

The reestablishment of the normal system of supply is facilitated by forwarding a part of the division supply column on the early railway trains.

Quartering detachments are forwarded on one of the first trains when it is impracticable to send them to the new area in advance of the troop movement.

Usually echelons of signal, military police, and medical units, and occasionally elements for antiaircraft and anti-mechanized protection will be required in the old area until evacuation of the area is nearly completed. Their movement is regulated accordingly.

■ 406. The assignment of units to entraining stations is determined by the loading facilities available at the several stations, the character of the matériel of the several units, the desirability of equalizing the number of trains leaving from each station, and the priority fixed for the arrival of the several elements of the command in the detraining area.

Units equipped with exceptionally heavy vehicles are assigned to stations provided with loading facilities adequate to the handling of such special matériel.

As far as practicable, other units are assigned according to their accessibility to entraining stations and with a view to equalizing as nearly as possible the number of trains leaving from each station. The priority fixed for the arrival of the several elements of the command in the detraining area may, however, require the assignment of a unit to a station other than the one most accessible to it.

■ 407. Check lists for orders and entraining and detraining tables are contained in FM 101-5. Technical and logistical data pertaining to rail movements are contained in FM 101-10.

■ 408. A transportation grouping consists of the troops, equipment, and supplies transported on one train. The order of entrainment of the several transportation groupings at each entraining station is fixed in accordance with the priorities established for the arrival of the several elements of the command in the detraining area. So far as is consistent with these priorities, it will usually be advantageous to regulate the order of entrainment in the order of the proximity of units to the entraining stations.

■ 409. An officer is detailed in charge of each entraining station. He supervises the entrainment, police, and anti-aircraft security at the station and is furnished with the necessary guard, transportation, and other assistance.

■ 410. Each unit moves to its entraining station in time to complete its entrainment before the scheduled hour of departure. Units should be directed to arrive at their designated entraining points at an hour amply sufficient to allow entraining but not so early as to result in congestion on routes to or at the entraining station. Premature entraining of personnel should be avoided.

The commander of each transportation grouping furnishes the representative of the railway transportation service at the entraining station with a statement showing the number of officers, men, horses, mules, vehicles by type, and the amount of baggage to be transported on his train.

■ 411. The commander of the transportation grouping causes the cars to be numbered in serial order, beginning at the head of the train. He then prepares a list showing the number of each car and the purpose to which it is assigned.

Methods to be employed in loading animals and equipment are indicated in the basic field manuals.

Troops are formed in the vicinity of the railroad station, and are divided into carload groups, each of which is assigned a car number, a noncommissioned officer is placed in charge of each group, and the command is marched to the train. Each carload group halts alongside the car to which it is assigned, the noncommissioned officer in charge regulates the boarding of the car and the distribution of the men.

■ 412. The commander of the transportation grouping details a guard and provides for the antiaircraft defense of his train, supplementing when necessary the antiaircraft weapons on the train with weapons of his own troops.

The commander of the transportation grouping is responsible for the maintenance of order, but exercises no control over the operation or movement of the train. The noncommissioned officer in charge of each car is responsible for the maintenance of order in his car; he does not permit soldiers to leave the train without authority or to ride on the top of the car.

■ 413. A representative of the command and an officer of the railway transportation service proceed to the detraining area in advance of the troops or arrive on the first train of the troop movement. The representative of the command determines the distribution of the troops in the detraining area in accordance with the commander's instructions, and, in conjunction with the representative of the railway transportation service, locates the detraining stations for each transportation grouping and prepares a detraining table. When the movement is not directed through a regulating sta-

tion already in operation, they establish a regulating station on the side of the detraining area from which the troops are due to arrive. The representative of the railway transportation service gives the necessary instructions to the railway personnel for routing each train to its detraining station. As each train arrives at the regulating station, the representative of the command gives the commander of the transportation grouping an extract of the detraining table pertaining to his unit and such other instructions as may be required.

■ 414. Units which consist largely of foot troops and ordinary motor vehicles may be moved rapidly and economically without special entraining or detraining facilities by a combination of movement by rail and marching, the foot troops only being moved by rail. When the available rolling stock is limited, the normal density of car loading may be greatly increased for short moves or the normal loads of motor vehicles may be moved by rail, foot troops being transported by the motor transportation thus made available. This latter method also may be advantageous when a well-balanced motorized covering force is desired, or when the threat of air attack requires a lesser density of loading of personnel in railway cars.

MOVEMENTS BY AIR

■ 415. *Air transport* may be employed advantageously for moving troops and supplies over great distances at high speed. The ability of troops transported by aircraft to land at any point permitted by the terrain with a great radius of action facilitates surprise.

■ 416. Troops transported by air are formed into tactical groupings which correspond to the carrying capacity of the available transport. These groupings are constituted according to their tactical missions and are landed in accordance with the requirements of security and in the order of their probable participation in subsequent operations.

■ 417. Because of the possible loss of individual airplanes, essential items of equipment and special weapons are duplicated and transported separately. Personnel and equipment essential in the exercise of command are distributed among the available airplanes.

Provision is made for security. Security of the landing areas is essential to a successful movement by air.

■ 418. For operations by troops transported by aircraft, see chapter 13.

SECURITY DURING MOVEMENT

■ 419. The *march order* for a command includes instructions relative to security. Additional instructions are given from time to time in accordance with the situation. Provision is made for cooperation between the security detachments and advanced reconnaissance elements.

■ 420. In a large command, some security is provided by the reconnaissance detachments or other troops operating between the enemy and the moving columns.

Each column provides for its own security to the extent required by the situation. A force in two or more columns may employ one security detachment for the whole force.

■ 421. Elements of antiaircraft artillery moving by bounds along the route of movement or on parallel roads protect the passage of defiles and points of congestion. To protect a motor movement, sufficient antiaircraft artillery to cover all such dangerous points at the same time is required since the speed of the column makes moving by bounds impracticable. For a short column or a particular unit within a column whose uninterrupted progress is particularly important, it is sometimes feasible to afford continuous protection by providing sufficient automatic antiaircraft weapons to accompany it throughout the march.

It must be expected that moving columns will be attacked by low-flying aircraft. All troops therefore must be thoroughly instructed in protective measures against such attacks and they must be permeated with the conviction that their organic weapons, especially automatic weapons, are effective in shooting down these low-flying planes.

■ 422. Security detachments regulate their movements so as to give the main body the protection required by the tactical situation and the terrain. When contact is imminent, the detachments having a higher rate of march than the main body move by bounds to successive critical terrain lines, halting on each line a sufficient time to assure the uninter-

rupted advance or retirement of the main body. Terrain lines which may be used to cover the passage of rivers and defiles are of special importance.

■ 423. A mechanized or motorized security detachment operates at greater distance from the main body. Its mobility permits early contact with the enemy. It is supplemented by other security forces operating between it and the main body.

■ 424. The *mission of an advance guard* is to prevent unnecessary delay of the main body and to protect it against surprise and observation. The advance guard insures for the main body the time and space required for its deployment for action. When contact with important enemy forces is made, the action of the advance guard depends upon the plan for the employment of the main body. The advance guard commander is given early information of this plan.

■ 425. The *strength and composition of an advance guard* vary with the strength and mobility of the command, its mission, the situation, the terrain, and the time of day. It should be no stronger than is necessary for security. Greater strength is required as the distance from the enemy decreases. For large commands it comprises components of all arms.

When contact is imminent, light artillery and engineers usually are attached to an advance guard. Medium artillery is attached when its need can be foreseen as, for example, to interdict distant defiles. In large advance guards, a portion of its artillery may be attached to the support.

Observation aviation transmits pertinent information directly to advance guards and to the column commanders.

In a march conducted entirely under cover of darkness, the advance guard needs less strength and less support. It may comprise only infantry and engineers.

■ 426. The *distance* between the advance guard and the main body is sufficient to preserve for the commander his freedom of action in the employment of the main body, but is never so great as to expose the advance guard to defeat before assistance can reach it. Distances are reduced at night, in close terrain, under conditions of low visibility and restricted observation, or when the advance guard is small.

■ 427. The *formation* of the advance guard is such as to assure its own security and provide sufficient distribution in

depth and width for its maneuver. From front to rear, it is divided into the advance guard cavalry or motorized detachment, the advance party, the support, and the reserve. In small advance guards the reserve may be omitted, the support then performing the functions of the reserve.

■ 428. The *support* is given sufficient strength for the execution of its security and reconnaissance missions. An artillery liaison section habitually marches with the support. Motorcycle and other messengers are attached for purposes of signal communication.

■ 429. The infantry strength of the *advance party* sent forward by the support seldom exceeds one platoon. The attachment of antitank weapons and mechanized vehicles may be desirable.

■ 430. The *reserve* constitutes the principal maneuvering and offensive element of the advance guard. It comprises as large a part of the strength of the advance guard as is consistent with its own security and the preservation of its freedom of maneuver. The bulk of the artillery and other auxiliary troops attached to the advance guard usually marches with the reserve.

■ 431. The order of the advance guard commander gives such information of hostile and friendly forces as is necessary for the guidance of subordinates, states the zone or route and objective of the march, designates the troops for the several elements of the advance guard, fixes the hour at which the support and, when necessary, the advance guard cavalry or motorized detachment will reach or clear the initial point, and gives such instructions to the several fractions and elements of the advance guard as may be required by the mission and the situation. (For further details, see FM 101-5.)

■ 432. The advance guard accomplishes its mission by reconnoitering the terrain to the front and on each side of the line of march, overcoming isolated hostile resistance, reconnoitering and preparing so far as practicable the route of advance for the movement of the troops (removal of obstacles, repair of bridges and roads, construction of turn-outs for motor columns, etc.). It reconnoiters those points which afford extended observation of the dispositions of the main body or which provide concealment for hostile recon-

noitering or harassing detachments. In proximity to the enemy, it seizes and holds important features of the terrain, particularly those that will cover the deployment of the main body from hostile observation and provide good observation and defilade for the employment of the artillery. According to circumstances, it pushes back hostile covering detachments, or opposes an enemy advance in force long enough to permit the main body to make its dispositions.

■ 433. The *cavalry* or other highly mobile reconnaissance detachments of the advance guard reconnoiter far enough to the front and flanks of the line of march to guard the column against surprise by hostile mechanized forces and artillery fire, and to secure timely information of the enemy and the terrain. If sufficient in strength and the situation so demands, they seize and hold terrain features covering river crossings, town exits, defiles, and the like. They thus assure as far as practicable the continuous movement of the advance guard and the possession of ground facilitating its deployment. In close proximity to the enemy, the requirements of local security and the necessity for flank protection increase, and cavalry of the advance guard is employed in the exploration of the terrain on the immediate front and flanks of the advance guard.

■ 434. The *advance party* protects the march and deployment of the support. It sends forward a *point* and other necessary patrols for local reconnaissance of the front of advance.

■ 435. The *support* protects the march of the reserve and executes the necessary local reconnaissance on the front of advance. It precedes the reserve at a distance sufficient to enable the reserve to deploy effectively. In the face of an enemy advance in force, it offers sufficient resistance to permit the reserve to prepare for action.

■ 436. As soon as hostile resistance is encountered, the leading elements of the advance guard move on a broader front. Zones of action may be assigned to components. Prompt support of the leading elements in dealing with hostile resistance is necessary. At the earliest indication of contact, the advance guard artillery occupies positions to render timely support and thereafter displaces or resumes the march as

appropriate. Provision is made to prevent infiltration of hostile mechanized elements seeking to attack the main body or rear subdivisions of the advance guard.

■ 437. The combat action of the advance guard is regulated by the contemplated maneuver of the main body. The mass of the advance guard is therefore put into action only for the purpose of gaining or retaining advantages which contribute to the tactical success or security of the main body.

■ 438. When a marching command develops for combat, the advance guard is employed as a covering force to protect the development. It seizes or holds the terrain requisite to the development and the contemplated scheme of maneuver.

■ 439. When the command makes a long halt during the course of a march, the advance or rear guard establishes a *march outpost*, usually from the support. Units of the support occupy critical terrain features controlling the approaches to the column, establish outguards or lookouts at commanding points, and when necessary send out patrols.

■ 440. The considerations governing the advance guard of a combined force of all arms also apply to the security of the more *mobile forces*, cavalry, armored, and completely motorized units. The principal modifications result from superior mobility of these units. Advance guards operate at greater distances from the main body and with greater distances between their own elements. The zone of reconnaissance is more extensive, both to the front and flanks. Close cooperation of observation aviation is of special importance.

■ 441. In addition to the reconnaissance carried out by the supports of advance and rear guards, it sometimes is necessary for the reserve and the main body to send patrols to the flanks of the line of march. These special flank reconnaissances are ordered by the commander of the advance guard and the commander of the troops.

■ 442. When the flanks of the command are not protected by adjacent units, it frequently will become necessary to provide stronger flank protection by the detail of a *flank guard*.

Flank guard duty is most efficiently performed by troops of high mobility. Greater distances must be covered than by troops of the main body. Frequently there is need to move

rapidly from one position to another. When available, Cavalry or motorized Infantry comprise the principal force. Flank guards are reinforced by artillery, engineers, chemical troops, and antitank units; they are given special matériel such as antitank mines and chemicals, and the means for constructing obstacles and executing demolitions. In some situations they are supported by combat aviation. Observation aviation transmits pertinent information directly to flank guards.

■ 443. The operations of flank guards are conducted with especial reference to the routes which favor attack against the flanks of the command. When the locality from which an attack can be expected is well defined, a flank guard occupies a position covering the routes of hostile approach until the command has passed. Full use is made of the available means of antimechanized defense. Infantry on foot assigned a mission of this kind must start its march in advance of the movement of the main body; on the completion of its mission, it joins the rear of the column.

When several such localities must be passed during the progress of a march, echelons of the flank guard move by bounds from one position to another. The execution of a mission of this character requires especially mobile troops.

When a route generally parallel to the line of march of the main body exists, and more or less continuous flank protection is required throughout the depth of the column during the march, the flank guard marches parallel to the main body, distributed in detachments over sufficient depth to be able to offer resistance to attack at various points on the flank of the main body and to deal with the inroads of small hostile detachments.

■ 444. When the main body executes a flank march in proximity to the enemy, flank protection assumes great importance; a strong flank guard is detailed. The advance guard may be converted into a flank guard to provide protection required by a change in the direction of march.

■ 445. During movements by shuttling, the flank guards may establish progressively a screen on the exposed flanks and thus provide a protected corridor which is maintained until the completion of the movement. When only minor forces

are likely to be encountered or when a protected corridor is impracticable, each contingent provides for its own protection and an escort is provided for the protection of returning transportation.

■ 446. A flank guard makes the necessary provision for its own frontal and flank security.

■ 447. A retiring force covers its retirement by the detail of a *rear guard*. For the strength, mission, and operations of a rear guard for a retiring force, see chapter 11.

■ 448. A force advancing toward the enemy details a rear guard if attack or harassing action, especially by mechanized or other highly mobile forces, is possible.

The mission of the *rear guard for an advancing force* is to assure the uninterrupted movement of the main body and its protection from hostile attack and ground observation from the rear. Its strength and composition are such as to permit the execution of its mission without the intervention of the main body. Usually a small detachment strong in engineers, automatic weapons, and antitank guns will suffice for the rear guard of an advancing force. Cavalry or mechanized vehicles are desirable to forestall attempts to pass the rear guard on the flanks.

The formation and method of operation of the rear guard are adapted to the situation. When the distance from the enemy permits, the rear guard retires in march formation. When in contact with the enemy, the rear guard distributes groups over a wide front and opens fire at long range in order to force the enemy to deploy and thus delay his advance. According to the requirements for protection of the main body, the rear guard attacks, defends, conducts delaying action on successive positions, or retires.

The rear guard of an advancing force executes only such demolition of bridges as are authorized by the commander of troops. If it appears necessary to prevent the destruction of important bridges by the enemy, the rear guard commander details the necessary bridge guards and notifies the commander of troops of his action.

■ 449. *Troop movements by air transport* in areas subject to attack from the air or ground require special security measures; transport aircraft are particularly vulnerable to attack

by hostile aviation and troops at loading and unloading points afford excellent objectives for attack either from the air or from the ground.

In flight, security is provided for such movements by flying in formation under escort of pursuit aviation, by dispersing, or by flying at night or under other conditions of low visibility.

Loading and unloading points in areas under our control are protected by pursuit aviation and ground forces, including anti-aircraft artillery and anti-tank weapons.

Unloading points within the hostile lines are protected by pursuit and bombardment aviation and by parachute troops dropped in advance augmented, when necessary, by detachments landed on the ground by airplanes. Surprise, boldness, and detailed planning are the essence of such operations.

CHAPTER 9

THE OFFENSIVE

SECTION I

GENERAL

THE OBJECTIVE

■ 450. An objective sometimes may be attained by maneuver alone; ordinarily it must be gained by battle. A sound tactical maneuver has a great influence on the successful outcome of battle.

■ 451. The purpose of offensive action is the destruction of the hostile armed forces. To facilitate the accomplishment of this purpose the commander selects a *physical objective* such as a body of troops, dominating terrain, a center of lines of communication, or other vital area in the hostile rear for his attack. The attainment of this objective is the basis of his own and all subordinate plans. This objective should have the following characteristics:

a. Its capture must be possible within the time and space limits imposed by the assigned mission.

b. Its capture should assure the destruction of the enemy in his position, or the threat of its capture should compel the enemy to evacuate his position.

c. It should produce a convergence of effort.

d. It must be easily identified.

e. Its capture should facilitate contemplated future operations.

■ 452. The objective having been selected, all components are directed in coordinated effort towards its attainment. Actions which do not contribute to this purpose are avoided.

■ 453. Sound tactical maneuver in the offensive is characterized by a concentration of effort in a direction where success will insure the attainment of the objective. On the remainder of the front are used only the minimum means necessary to deceive the enemy and to hinder his maneuver to oppose the main attack.

DISTRIBUTION OF FORCES

■ 454. In the offensive, troops are distributed into two or more principal tactical groupings: one or more *main or decisive attacks* in which the *greatest possible offensive power is concentrated* to bring about a decision, and one or more *secondary or holding attacks* whose mission is to render maximum assistance to the main attack.

Main attack groupings are designed to secure the objective and to destroy the hostile force. Secondary attack groupings are designed to *hold the enemy* in position, to *force him to commit his reserves* prematurely and to an indecisive location, and to *prevent him from reinforcing* the front of the main attack.

■ 455. In each tactical grouping, the mass of the available means of combat is concentrated in a *main effort* and is applied *in a decisive direction*.

■ 456. *Main attacks* are characterized by narrow zones of action, by strong support of artillery, tanks, and other supporting weapons, by effective support of combat aviation, and by deep echelonment of reserves.

■ 457. *Secondary attacks* are characterized by lack of depth, reduction of reserves to the minimum, maximum fire power in the attacking echelon, and by wide zones of action for the attack units. They will therefore usually be assigned limited objectives initially.

■ 458. When it is impracticable to determine initially when or where the main attack is to be made, the commander retains his freedom to act by disposing his forces in great depth, by holding out strong reserves, and by maintaining close control of his supporting weapons.

■ 459. Attacking echelons once committed to action lose their immediate availability for employment in the execution of other missions. Deployed and under fire, they can change front only at the risk of incurring heavy losses. The commander can materially influence the course of an action once begun through the employment of reserves, fire support, and combat aviation.

■ 460. In selecting the direction for the main attack, the terrain must be carefully studied. The choice of the front

on which the main attack and the main efforts of subordinate units are made often is determined by the possibilities which the terrain offers for effective employment of artillery and mechanized units.

Selection of the direction of the main attack also is influenced by the time available for movement before the attack must be launched. In many situations the most rapid and decisive results are to be expected when the main attack is composed principally of large armored units or when such units lead the main attack. Air superiority and effective support of the armored units by combat aviation are essential to the sustained drive of the armored units.

FORMS OF OFFENSIVE ACTION

■ 461. Attack maneuvers are classified as *envelopments* and *penetrations*.

■ 462. In an envelopment, the main attack is directed against the flank or rear of the initial disposition of the enemy's main forces and toward an objective in rear of his front lines. It seeks to surround that portion of the enemy's forces in front of the objective. It is assisted usually by a secondary attack directed against the enemy's front.

A successful envelopment depends largely on the degree of surprise attained and on the ability of the secondary attack to contain the bulk of the enemy's forces. Surprise is secured by maneuvering to avoid observation by the enemy and by deceiving him. Superior mobility increases the prospect of success.

An envelopment avoids attacking on ground chosen by the enemy, and forces him to fight in two or more directions to meet the converging efforts of the attack. An envelopment which strikes the defender's flank or rear so as to avoid any part of his organized front and small-arms fire from that front is preferable. It minimizes losses, handicaps the defender's ability to meet it promptly, compels the defender to meet an attack on ground chosen by the attacker and when successful is more decisive.

■ 463. A *turning movement* is an enveloping maneuver which passes around the enemy's main forces, striking at some vital point deep in the hostile rear. The force making the maneuver usually operates so far from the secondary attack that the

principal tactical groupings are beyond mutual supporting distance (the distance by which forces may be separated and yet permit one to move to the aid of another before it can be defeated by an enemy force); hence, each grouping must be strong enough or mobile enough to avoid defeat in detail. When conditions favor such action, all combat elements of the command may be employed in the turning force, leaving only reconnaissance elements confronting the hostile dispositions. The turning movement is adapted particularly to highly mobile commands, such as cavalry, armored and motorized forces, and forces transported by aircraft. It is invariably employed by highly mobile forces in situations in which the vital objective in the hostile rear can be seized by such a maneuver before it is necessary to involve the enveloping force in a major engagement with the enemy. Deception, secrecy, and mobility are vital to successful execution of a turning movement.

■ 464. When the enemy takes up a defensive position, the commander of the attacking forces should consider the possibility of turning the enemy out of his position and forcing him to withdraw and fight on ground more favorable to the attacker.

Situations may occur, especially in the pursuit of a defeated force, in which the enemy can be forced by direct attack to take up a defensive position while a portion of the more mobile attacking forces executes a turning movement against his lines of communication.

■ 465. A *double envelopment* is executed by three principal tactical groups, two enveloping attack forces and a secondary attack force. A simultaneous envelopment of both flanks generally requires considerable superiority.

The command seeking to attack by double development must be deployed or capable of deploying on a broad front against an enemy on a much narrower front or with little capability or room for maneuver. The maneuver is executed by fighting a holding battle with the center while enveloping forces strike on both hostile flanks. When mobile forces are available in reserve, they may complete the envelopment by an attack from the rear. When conditions favor it, this form of maneuver should be used because of the decisive results it promises.

■ 466. An *envelopment of one flank* is executed by two principal tactical groups, the main or enveloping attack force and the secondary attack force. After an initial envelopment of one flank, favorable conditions for passing to a double envelopment through the use of reserves may be created when the success of our troops has placed the enemy in a disadvantageous situation.

■ 467. The enemy's preparations to meet an envelopment of his flank ordinarily cannot be organized as completely as the defense of his front, especially if the envelopment is launched from a locality deep on the hostile flank or rear.

The defender strengthens an unsupported flank by reserves echeloned in depth and in width. When threatened with envelopment he moves them to meet the maneuver. He may attempt to envelop the attacking forces, or to extend his flank beyond that of the attack up to the limit of his strength. An attempt on the part of the attacker to meet such hostile extension may lead to overextension or to a dangerous separation of the enveloping forces from those making the secondary attack. It usually is better to take advantage of the enemy's extension and consequent weakness by retaining a deep formation and to penetrate his thinly held front than to overextend in an effort further to outflank the position. When the enemy extends his position beyond the enveloping forces, particular attention must be paid to protecting the exterior flank by the use of the general reserves of the higher commander.

■ 468. In a *penetration* the main attack passes through some portion of the area occupied by the enemy's main forces and is directed on an objective in his rear. It is characterized by the complete rupture of the enemy's dispositions; the seizure of the objective by operations through the gap; and the envelopment of one or both flanks created by the breakthrough.

The essential conditions for success are surprise, sufficient fire power, especially combat aviation and artillery, to neutralize the front of penetration, favorable terrain within the hostile position for the advance of the attacking troops, and strength to carry the attack through to its objective.

■ 469. When the situation does not favor an envelopment, the main attack is directed to penetrate the hostile front.

Conditions which demand a penetration are enemy's flanks unassailable; lack of time to make an enveloping maneuver. Conditions which favor a penetration are overextension of the enemy; terrain and observation favorable for more effective cooperation of the combined arms. Such an attack often can be organized more quickly than can an envelopment.

■ 470. In the penetration of a defensive position, the main attack is launched on a front wider than that of the contemplated break-through in order to hold the enemy in place on the flanks of the penetration. The attack on the remainder of the hostile front is designed to contain the enemy and prevent him from moving his reserves.

The amount of artillery, mechanized units, and supporting combat aviation available largely determines the width of the front of penetration. The wider the front of penetration, the deeper can it be driven and the more difficult will it be for the enemy to close the gap. The deeper the penetration, the more effective will be the action of mobile reserves in seizing the objective and rolling up the hostile flanks.

The greatest distribution in depth is placed opposite the prospective front of penetration. The distribution of troops provides for three separate impulses; a break through the hostile position, a widening of the gap thus created by enveloping one or both interior hostile flanks, and the seizure of the objective and exploitation of the success.

The sequence of these impulses depends on the situation. In some situations it is practicable through the existence of weaknesses or gaps in the enemy's front for mobile troops (armored, motorized, or cavalry divisions) to break through and to proceed straight to the objective, while operations of local envelopment and exploitation are performed by less mobile troops. In other situations foot troops must break through, the more mobile troops being held initially in reserve and used later to operate through the gap created by the foot troops.

■ 471. The mission of the attacking echelon of troops is to break through the enemy's dispositions so that he will be unable to reconstitute his front on a rearward line. Until this mission has been accomplished, the attacking troops do not divert their strength to the attack of the flanks of the gap. Hostile counterattacks against the flanks of the pene-

tration are met by reserves, by the fire of the artillery, and by combat aviation.

The missions of rolling up the flanks of a gap created by penetration and of exploiting the break-through are assigned to reserves. Cavalry, armored and motorized units are especially suitable for seizing the objective and for exploitation. These units are supported by combat aviation operating against hostile reserves and artillery and other important objectives. Troops transported by air may be used to support these operations.

■ 472. In large commands, a penetration often is initiated by launching simultaneously two or more powerful attacks (a *multiple penetration*) against weak localities on the hostile front. Strong localities are contained initially by secondary attacks. When the penetrating attacks have advanced far enough to permit, the interior strong localities are reduced by maneuver, and the penetrating attacks are united into a single main attack. The pinching out of strong hostile localities often is facilitated by launching multiple penetrations in converging directions. The doctrines applicable to a single penetration govern the organization and conduct of a multiple penetration.

■ 473. Whether the maneuver adopted is an envelopment or a penetration, success will depend primarily on intelligent, energetic, and coordinated execution. This execution must be based on a sound plan which is influenced largely by the objective and direction of the main attack.

The doctrines which underlie the employment of the combined arms in the offensive are conservation of the combat power of troops in the attack echelon, provision of assistance for them to close with the enemy, and thereafter support of their attack until the enemy's power of resistance is broken.

FRONTAGES AND DEPTHS

■ 474. The *frontage* assigned to any unit in an attack varies with the mobility, type of armament, mission and combat power of the unit, the terrain, the amount of fire support available, and the probable hostile resistance. As a general guide, an infantry battalion at full strength in a main attack seldom is assigned a *frontage* less than 500 yards or more than 1,000 yards measured on the front of the hostile position.

■ 475. Units are distributed in *depth* to provide flexibility of maneuver, continuity in the attack, and security. For infantry units, depth of formation for combat rather than a wide extension of front is necessary in the initial deployment. The progress of battle will call for maneuvers that cannot be clearly foreseen. This condition can be met only by initial distribution in depth.

Laterally the distribution of troops in attack is governed principally by the doctrine of the main attack and main effort. It is influenced also by the relative advantages offered by different sections of the terrain. When the situation requires an unusually wide extension of the command, the increase is effected by widening the gaps between units.

RESERVES

■ 476. The initial strength and location of the *reserve* will vary with its contemplated missions, the type of maneuver, possible hostile reaction, and clarity of the situation. After the attack is launched the *reserve* and the fires of supporting arms are the principal means available to the commander for shaping the course of action and for enforcing favorable decision.

The primary mission of the reserve is to enter the action *offensively* at the proper place and moment to clinch the victory. Hence its initial strength and location are controlled largely by the maneuver to be executed.

■ 477. In a penetration the reserve must be large enough to exploit the break-through by enveloping one or both of the flanks created and by operating deep in the hostile rear.

To facilitate its rapid movement through the gap the reserve is located generally in rear of the main attack.

■ 478. In an envelopment the reserve must be large enough to extend the envelopment or to exploit a successful enveloping action by operating against the hostile rear. To favor the envelopment the reserve is disposed toward the flank enveloped.

■ 479. When open flanks exist or when there is danger of a hostile threat some reserves are disposed to meet dangerous contingencies.

■ 480. When the situation is relatively clear and enemy capabilities are limited the reserve may consist of a small fraction

of the command disposed to favor the maneuver. When the situation is obscure the reserve may consist initially of the bulk of the command, centrally located and prepared to move to any point on the front or flanks.

■ 481. The location of the reserve should combine a maximum of protection for itself against hostile observation and air and mechanized attack with a road net which facilitates rapid movement to any point of possible employment. Motor vehicles should be held available for the movement of reserves lacking organic means of rapid movement.

■ 482. Choosing the proper time at which the reserve should be used is often the commander's most difficult and most important decision.

Nevertheless, at the decisive moment of action every man that can be used to advantage must participate in the battle and the reserve must be launched without hesitation. As far as practicable the reserve is sent in by complete units. Reinforcement by dribblets is avoided. Commanders endeavor to reconstitute reserves from troops which the course of the action has made available.

COORDINATION

■ 483. The commander is responsible for coordination of the action of all elements of his command.

■ 484. In all cases the highest degree of coordination permitted by the situation and time element is sought. The considerations discussed below are applicable in general to situations in which thorough coordination can be prescribed. In other situations they are applied to the degree practicable.

■ 485. Against a strong enemy a decision to develop and deploy for attack directly from march columns risks loss of control and sacrifices some of the capabilities of artillery, tanks, and other supporting weapons. Ordinarily an attack in a moving situation may be organized and *coordinated in assembly positions*.

■ 486. From a march formation the commander develops the main body for a coordinated attack by assigning march objectives to the larger units, usually the assembly positions they are to occupy, and routes or zones of advance thereto. The development order announces the missions of units

already engaged, the missions of the artillery, the dispositions of the main body, the security measures to be taken, and instructions for further reconnaissance. It provides for essential administrative details so that the necessary preparations can be made. Instructions given in the development order are as complete as possible so that the attack order may be brief. For movement to assembly positions and security during development, see paragraphs 364-369, and 436-438.

■ 487. The location of assembly positions is dependent on several factors. Darkness, cover from observed hostile artillery fire, a thorough knowledge of the situation, and a plan of attack already decided, favor advanced positions located in conformity with the plan of maneuver. Conditions the reverse of these indicate the selection of assembly positions well back.

Units of high mobility such as tanks, cavalry, and armored forces may complete their development and preparations for battle at greater distances from the hostile front.

If the plan of attack involves an enveloping maneuver, the assembly position of the enveloping force is set off at a sufficient interval from the troops in the secondary attack to preclude interference between units when deployed for attack.

■ 488. Subordinate commanders assigned assembly positions may in turn assign more advanced assembly positions to the component units of their commands as knowledge of the situation and of plans becomes available. The final assembly position of an infantry battalion in the attack echelon usually is in the most forward concealed position available in rear of the line of departure. It should afford cover from hostile small-arms fire.

■ 489. While units are moving into and during the occupation of their assembly positions the commander prepares his orders and completes arrangements for the execution of his plan of maneuver.

Commanders of troops in the attack echelon and the commanders of units designated to support them coordinate the action of their units. Reconnaissance is initiated by all commanders prior to arrival in their final assembly positions.

■ 490. As each unit arrives in its assembly position, measures are taken immediately for security and for clearing the roads.

Signal communication is established without delay between the superior command post and the major subordinate units. Equipment not essential to combat is disposed of, extra ammunition is issued to troops, reconnaissances are completed, coordination of the plans of maneuver and plans of fire of subordinate units is completed, and attack orders are issued promptly.

■ 491. Development of the command terminates with the troops distributed in accordance with the plan for their employment, and in an approach march formation favoring rapid deployment.

■ 492. Should the commander decide that rapidity of action is essential to retain a tactical advantage, he may dispense with assembly positions, decentralize operations to combat teams or task forces, and issue orders to those units to develop and attack.

■ 493. Subordinate units to be deployed for attack ordinarily are assigned a *zone of action* and a *direction of attack* or an *objective*. Zones of action regulate the limits for battle reconnaissance and combat of the unit. It is not necessary that troop formations extend across the entire zone of action of a unit as part of the zone of action can often be covered by fire, by small patrols, or by both. A preponderance of force on any particular part of the front is obtained by varying the zones of action of subordinate units.

Zones of action are defined by designating their lateral *boundaries* or by the assignment of a front of deployment and the designation of the lateral limits of the objective. An open flank ordinarily is not bounded. In some situations, the designation of the objective is sufficient to indicate the zone of action. In large units the designation of objectives and boundaries may be made from the map; in small units these designations are made on the ground. *Points designated should be identified easily on the ground.*

Zones of action should extend through the depth of the hostile position at least as far as the location of the hostile artillery. Important localities and terrain corridors commensurate with the size of a tactical unit should lie wholly within the zone of action of that unit. If it is desired that an adjacent unit render special assistance to another in the

attack, this assistance should be clearly stated. During the progress of combat and especially when reserves are committed to action appropriate changes in zones of action are made.

To take advantage of favorable routes of approach units may move temporarily into adjacent zones. Such movement must not interfere with the action of adjacent units or result in a dangerous massing of troops. The emplacement and movement of artillery and other supporting weapons in zones of action adjacent to the zone of the units they support are permissible, but must be carefully coordinated. (See par. 538.)

The battalion is ordinarily the smallest unit which is assigned a zone of action. Smaller units are usually assigned directions and objectives.

When lateral boundaries are not clearly defined they are supplemented by assigning compass directions of attack. This is particularly important in small units.

When tactical groupings are separated initially by wide intervals and the direction of their subsequent maneuvers cannot be foreseen, designation of a boundary between them may be withheld until a later phase of the action. In such situations it frequently will be necessary to establish a limiting line between them for coordination and control of their supporting fires.

■ 494. A *line of departure* usually is designated from which the attacking troops are launched at the prescribed hour or separate lines of departure and hours are assigned to the several attacking units. The purpose of the line of departure is to coordinate the advance of the attack echelon so that its elements will strike the enemy in the order and at the time desired. This line should be recognized easily on the ground and should be approximately perpendicular to the direction of attack.

■ 495. The *time of attack* is the hour at which the attack is to be launched. If a line of departure is prescribed, it is the hour at which the line is to be crossed by the leading elements of the attack. It is determined by the time required for commanders to make the necessary reconnaissance, prepare plans, and issue orders; for the cooperating arms to coordinate their plans; and for the attack echelon to organize its attack and move to position.

The secondary attack may precede the main attack to force the enemy to commit the greatest possible portion of his forces against that attack, or the main and secondary attacks may be launched simultaneously.

Unity of effort is promoted by assigning subordinate units objectives which insure mutual support and by prescribing where and in what direction subordinate units are to make their main effort. The combat action and direction of attack taken by subordinate commanders must be such as to build up the main effort of the tactical grouping in accordance with the intentions of the superior commander.

The commander must endeavor constantly to prevent the attack from breaking up into a series of uncoordinated combats.

■ 496. The *degree of surprise* attained is dependent in a large measure on the coordination and timing of the measures taken to deceive the enemy. Ruses, demonstrations, feints, and other measures for deception executed at the wrong time and place will be obvious to an alert enemy and will warn him of the impending attack. Superior mobility and speed of execution may be determining factors in achieving surprise.

■ 497. The best guarantee for success in the attack is effective cooperation between the troops in the attack echelon, the supporting artillery, and any supporting combat aviation. The superior commander coordinates the fire support of his artillery with the plan of maneuver of the attacking troops. Acting through the commander of supporting combat aviation he coordinates the fire support of the combat aviation with the fire of his artillery, his plan of maneuver, and his plan of employment of mechanized units.

■ 498. To assure close cooperation with the attacking troops, *artillery units* assigned to direct support of designated units maintain constant connection with supported units through common command posts or by liaison agents. Ordinarily an artillery battalion is placed in direct support of an infantry regiment or a cavalry brigade. Cooperation is facilitated by habitually associating the same units on the march and in combat.

■ 499. The command post of the division artillery is at the division command post. The same rule applies in the case

of the senior artillery commander of a smaller force of combined arms.

Subordinate artillery commanders establish their command posts where they can exercise tactical command and fire direction most effectively. If an artillery commander locates his command post at a place other than the command post of the supported unit, he establishes liaison and maintains signal communication with the commander of the supported unit.

■ 500. The commander of the supported unit informs the supporting artillery commander of the situation, his plan of attack, and the artillery support desired. The supporting artillery commander informs the commander of the unit of the number and general location of his batteries, the present location of the artillery observation posts and those that must be seized during the advance, the terrain which the artillery commands with observation and fire, and the means by which the artillery can most effectively support the attack. (See par. 528.)

Based on this exchange of information, the associated commanders arrange the plan of fire support to be given by the artillery during the attack.

The artillery commander must comply with the requests of the supported unit commander to the limit of his capabilities, subject only to orders received from higher authority. If he receives a fire mission which conflicts with the needs of the supported troops, he reports the situation to the commander ordering the mission and then complies with the resulting decision. If the urgency of the situation precludes this report, the artillery commander acts on his own initiative in accordance with his knowledge of the situation, reporting his action to his superior at the first opportunity.

As a rule a liaison section is assigned to each infantry battalion or cavalry regiment. A mutual obligation rests upon the commanders of supported and supporting units that liaison once established is maintained. It is essential that the supporting artillery know at all times the location of the leading elements of the attack echelon and be kept informed of the plans of the supported unit.

■ 501. The fire of other supporting weapons is coordinated with that of the artillery. The fire of these weapons supple-

ments the artillery fire of direct support chiefly by engaging targets in the immediate foreground whose neutralization by artillery might endanger the attack echelon, and targets within range on which artillery fire cannot be placed.

■ 502. The action of *combat aviation* in support of ground troops is closely coordinated with the plan of attack. Its first objectives are those hostile elements, the destruction or neutralization of which will contribute most toward a successful attack. During battle, combat aviation is especially useful as a means, immediately available to a commander, to exploit a success, to correct an adverse situation, to attack reserves or reinforcements or to support ground troops in overcoming unexpected resistance. *Its employment to complement the fire of artillery in a crisis or in fast moving situations is habitual, especially in attacks by tanks and armored forces.*

■ 503. To assure effective cooperation, supporting combat aviation should operate from landing fields within short flying time of the zone of action and must be included in the air-ground radio net and wire net of supported units. To facilitate coordination of its effort with that of the ground troops, a liaison officer from supporting combat aviation should be with the supported unit. Supported ground troops must keep supporting combat aviation informed of the location of leading elements and of plans of maneuver and fire. It is especially important that adequate means of identification of friendly ground troops be carefully arranged and coordinated.

■ 504. An integration of the attack into a unified whole requires complete coordination and cooperation, prior to and during the operation, between supporting tanks, artillery, and combat aviation. (See chs. 2 and 16.)

■ 505. Because of the difficulty of establishing and maintaining effective chemical concentrations in mobile operations, use by the attacker of *chemical agents* other than smoke is limited. Smoke must be carefully employed in respect to both time and space and must be closely coordinated with other supporting fires and with the action of tanks and supporting aviation. Under favorable conditions of wind and weather, smoke is used to blind hostile observation posts, anti-tank guns and infantry supporting weapons, to conceal the

approach of the attack echelon, and to protect the flanks of the attack. It is especially useful during short periods when troops must cross exposed ground.

■ 506. As soon as the commander has made his decision, he completes his plan of attack and issues his *attack order*, wherein he prescribes the necessary coordination for the action. (See FM 101-5.)

■ 507. When conditions limit the ability of the commander to exercise a timely and direct influence on the action, the initiative of subordinates must be relied upon to a great extent. The commander issues less detailed orders to those tactical groupings over whose action he can not exercise a direct influence and attaches to them the means necessary to accomplish their tasks. He remains with and personally directs the action of the troops whose mission is of decisive importance to the action. This method of conducting an operation is most prevalent in pursuits, in opening phases of a meeting engagement, during crises of battle, and in envelopments in which the main and secondary attacks are separated by wide intervals. The greatest degree of coordination possible is prescribed initially; complete coordination is accomplished as soon as the course of action permits. (See par. 125.)

■ 508. Coordination is assured by *command and staff visits* to subordinates to see that orders are understood and are being carried out.

SECTION II

ATTACK IN WAR OF MOVEMENT

■ 509. A *meeting engagement* is a collision between two opposing forces more or less unprepared for battle. Ordinarily, the collision is caused by uncertainty or obscurity in the situation. This aspect is often present in the operations of small units and in situations where the means of reconnaissance have failed or are unable to operate.

A meeting engagement may ensue when each opponent is cognizant of the other, yet both decide to attack without delay to retain some tactical advantage, to gain a decisive terrain feature, or from a feeling of superiority. It may occur when one opponent decides to deploy hastily for defense while the other attacks before this defense can be organized.

■ 510. In open warfare, *immediate orders* and *rapid action* are essential. By the prompt exercise of initiative, endeavor must be made to deprive the enemy of his freedom of action and prevent the coordinated employment of his forces. A great advantage accrues to the force which first succeeds in making effective preparations. Action cannot be delayed awaiting the results of detailed reconnaissances. Prompt estimate of the situation, quick decision, and prompt attack are essential to success.

The tactical situation which develops on first contact has a strong influence on the subsequent course of action. Commanders must be well forward when the enemy is engaged; otherwise, units may be employed improperly.

Opportunities for decisive action must be exploited immediately. The rapidity of modern combat frequently makes the time element decisive.

■ 511. Open warfare requires the widest possible exercise of *initiative* by commanders of all echelons in the execution of the general mission assigned to the command.

Information gained by reconnaissance agencies during the advance affords a basis for the commander's preliminary disposition, and may enable him to determine the general line of engagement with the enemy and the plan of attack. As a rule, however, the enemy's intentions will remain obscure and will seldom be clarified until after the initial engagement.

■ 512. As soon as the prospect of an engagement becomes apparent, the superior commander initiates plans for the operation and disposes his command to facilitate its rapid entry into action. One or more advance message centers are established to facilitate prompt signal communication.

Early and rapid transmission of orders to elements of the main body is essential to an orderly and timely employment of the command, and may be vital, particularly in columns of high mobility.

■ 513. Initial orders are ordinarily issued in fragmentary form to the various elements of the command. The sequence in which orders are issued is based upon the priority of, and the time required for, execution.

■ 514. When timely information of the enemy is lacking, subordinate commanders are relied upon to exercise their initiative and make important decisions in consonance with

the general mission and the intentions of the superior commander. Without delay, the superior commander coordinates the action which his subordinates have initiated. (See par. 507.)

■ 515. Employment of the *advance guard* is the commander's first problem and is the basis for the employment of the remainder of the main body. When contact is imminent or when entering the zone of effective hostile artillery fire the advance guard moves forward on a broad front. When hostile resistance is encountered, the advance guard must secure possession of terrain that will afford good observation for the artillery and other supporting weapons, and gain the time and space required for the development and deployment of the main body. These missions require aggressive action against the enemy's leading troops. Unfavorable terrain or an encounter with superior hostile forces may make a temporary defense or a limited retirement advisable to preserve the commander's freedom of action. However, all advance-guard actions are characterized by speed and aggressiveness, by broad fronts, and by small or no reserves.

The advance guard performs its mission most effectively when, after securing possession of the essential terrain features, it is disposed to protect the deployment of the main body. Its artillery deploys on a broad front, opens long-range fire on enemy columns forcing them to an early deployment, and interdicts the principal routes of approach.

The advance guard is strongly reinforced by artillery from the main body and by supporting combat aviation. It is reinforced with other elements of the main body only when the situation *clearly* demands it.

■ 516. *Cavalry*, after withdrawal from the front of advance-guard infantry, may be employed on the flanks to screen our own dispositions, to execute reconnaissance or harassing action against the hostile flanks and rear, or may be held in reserve.

■ 517. The speed of modern offensive operations demands that supporting artillery be prepared to react immediately with fire when opportune targets are presented. To do this artillery observation and positions must be as far forward as possible.

Early entry into action of the bulk of the artillery with the

main body is essential to protect the development, to give support and cohesion to the advance-guard action, and to gain an early superiority over the hostile artillery.

It may be necessary for a portion of the artillery to occupy temporary firing positions to insure that troops do not come under hostile fire without artillery protection.

■ 518. The artillery preferably is deployed initially so that it can protect the development and support the attack from the same position areas. When initial positions are too distant, the artillery in direct support must so displace forward as to assure close support of the attack echelon.

While other troops are organizing their attack, the artillery completes preparation of firing data and arrangements for supporting the attack. Observation aviation is placed at the disposal of the artillery commander in order that the hostile artillery and large troop assemblies may be located and fire conducted on important targets at long range.

■ 519. In accordance with his estimate of the situation, the commander develops the main body and organizes a coordinated attack, or attacks directly from march columns with a part of his command and organizes a more coordinated attack with the remainder, or attacks with his whole force from march columns as units become available. (See pars. 485-487, 492, and 507.)

■ 520. Regardless of whether the attack is launched from assembly positions or directly from march columns, the method of approach to the hostile position is the same. Each battalion of the attack echelon moves to the most advanced position in which it can make its final preparations under cover from hostile small-arms fire.

The commander of each attack unit directs its advance in the assigned zone of action so as to be able to cross the line of departure at the prescribed hour. Each attack unit reconnoiters its zone of action and supports the reconnaissance elements with its supporting weapons. To keep troops in hand prior to contact with the hostile forces, a base unit is usually designated on which the other units regulate their advance from one terrain line to the next. Terrain features which afford extended observation, or which are otherwise of tactical importance, are the objectives of each bound.

■ 521. Whether an offensive battle is the result of a meeting engagement or is based on the attack of an organized position, the *conduct of the attack* from the time the enemy is engaged until he is defeated is essentially the same. What difference there is exists in the coordination, power, and speed developed in the opening phases. (See pars. 535-572.)

SECTION III

ATTACK OF AN ORGANIZED POSITION

PRELIMINARY OPERATIONS

■ 522. Ordinarily the defender will attempt to screen his main position and deceive the attacker regarding his dispositions by the employment of covering forces. A thorough reconnaissance of the hostile position and its foreground is of primary importance. This reconnaissance seeks to determine the location, depth, and extension of the hostile position, the hostile occupation of the position, contaminated areas, the location of the hostile artillery, and natural and artificial tank obstacles. It involves a thorough study of the map and air photographs of the enemy's combat zone, and the use of available air and ground reconnaissance agencies.

■ 523. If air reconnaissance and advance detachments fail to establish definitely the main hostile position, the leading troops are reinforced strongly by artillery, combat aviation, other supporting weapons, and, if necessary, by tanks. Rifle reinforcements are held to a minimum. The reinforced leading troops execute a *reconnaissance in force* against critical points in the enemy's outpost zone to drive in the enemy's covering forces and determine the hostile main position. Their mission is to seize the terrain which will permit the proper deployment of the command and permit observation of the hostile battle position.

When the leading troops finally encounter a well-organized system of defensive fires of hostile artillery and other supporting weapons, it may be taken as a reliable indication that the hostile battle position has been reached. The leading troops establish themselves on the critical points and cover the deployment of the mass of the artillery.

■ 524. During these preliminary operations, cavalry and other troops seek to locate the flanks of the hostile position. The

leading elements are protected from hostile counterattack by strong supporting fires and by the presence of other units moved to concealed positions within supporting distance. The remainder of the command is held in readiness beyond the range of effective hostile artillery fire. Necessary measures are taken to protect it against air attack and attack by mechanized units.

■ 525. Reconnaissance is continued to obtain information as a basis for the conduct of the attack. This reconnaissance provides more detailed information for the assignment of objectives and as a basis for the plan of fire of the artillery and the other supporting weapons.

Reconnaissance of the terrain must determine the most favorable routes of approach to the hostile position, the nature and strength of obstacles, and the possibilities for employment of mechanized units.

Air photographs of the hostile main position are distributed to subordinate commanders.

The terrain over which the attack must pass is studied on the ground and from air photographs to determine the terrain compartments which the defender has organized for defense and can cover with defensive fires, and the areas in which the attacker can advance best by flanking fire and maneuver.

Artillery conducts reconnaissance to determine the possibilities of artillery observation and fire, and the location of its firing positions and the routes of approach thereto.

■ 526. Determination of the weak points in the enemy dispositions is of vital importance. By fire of artillery and other supporting weapons delivered from different directions, and by feints and raids, effort is made to ascertain the enemy's dispositions and his plan of defensive fires.

PREPARATIONS FOR ATTACK

■ 527. Based on the estimate of the situation, the main attack is made either as an envelopment or a penetration. A carefully coordinated attack is required. Orders are issued for the preparations for the attack and for the measures for secrecy and deception to be adopted.

Preparations for the attack include the completion of the signal communication system, organization of the command

for combat, provision for ammunition supply, and the regulation and coordination of supporting fires of all arms.

Special consideration is given during the preparation to measures designed to insure the continuity of the attack. Adequate provision is made for placing in readiness the necessary material and engineer units to destroy obstacles, assist the advance of tanks and heavy weapons, and for the construction of roads connecting our own system with that of the enemy.

All preparations for the attack are completed as far as practicable before the occupation of final assembly positions. Preparatory measures likely to betray the imminence of the attack are carried out secretly or are deferred as long as possible.

Restrictions are imposed on those activities within our front lines and in rear areas, which may disclose, to hostile reconnaissance, operations for the attack. Strict surveillance is imposed on the use of radio communication.

■ 528. The plan of attack consists of the *plan of maneuver* and *plan of fire*. The attack unit, artillery, and supporting combat aviation commanders make detailed arrangements for coordinating the action of their units to carry out the common mission. (See pars. 498-500.)

In coordinating their plans, it is essential that the supported and supporting commanders carefully study the successive compartments of terrain in which hostile resistance may be encountered and identify the successive intermediate objectives of the attack.

An agreement is reached relative to the known targets to be taken under fire respectively by the artillery, by combat aviation, and by the other supporting weapons. Areas to be kept under surveillance for targets appearing after the attack is launched, especially those targets in adjacent zones which are dangerous to the advance, are agreed upon. Associated commanders must arrange for mutual reinforcement of fire.

■ 529. Attack unit commanders must receive early information of their *assembly positions* and *zones of action* in order that they may make their own reconnaissances and formulate plans.

Attack units usually move at night into final assembly positions, preparatory to an attack the next morning. Move-

ment of units into their assembly positions by day generally is practicable only when visibility is poor or when overwhelming artillery and combat aviation support is available.

When tanks are employed, their assembly positions and routes of approach are reconnoitered, marked, and prepared.

■ 530. The first *mission of the artillery* is to protect the movement into and the assembly positions of attack units. During this phase, hostile artillery and observation posts constitute its principal targets. Registration fires should be conducted so as not to disclose the impending attack. The artillery gives special consideration to those measures which will attain surprise in the opening of effective fire, gain fire superiority over the hostile artillery, and concentrate the mass of its fire on the decisive objectives.

■ 531. *Artillery positions* are selected so that fire can be concentrated on the objectives of the attack. Defilade, concealment from air reconnaissance, and proximity to observation are sought. Sufficient time is allowed for the preparation of firing data, establishment of signal communication, and organization of the artillery ammunition supply.

Artillery usually moves into position by echelon. The movement is frequently wholly or partly executed at night. Units assigned to positions screened from hostile air reconnaissance are moved first. The movement of artillery is regulated to avoid interfering with the attack echelon in its occupation of final assembly positions. Long-range artillery is placed well forward to be able to take under fire the most distant echelons of the defender's light and medium artillery.

■ 532. During the advance of the attack echelon from assembly positions, the hostile artillery constitutes the principal target of our artillery fire. Superiority over the hostile artillery is indispensable for the success of the attack. It rarely can be attained after the attack is launched.

Located hostile batteries are silenced early in the artillery action. Their neutralization then is maintained by a portion of the artillery in order that the mass may be employed on other missions until again required for counterbattery fire as new hostile batteries are located. If counterbattery fire is unable to gain superiority over the hostile artillery, neutralization of the hostile observation just prior to the attack is of great importance.

■ 533. Artillery fires prior to the hour of attack may be limited to normal fires already in progress, or the attack may be preceded by an *artillery preparation*.

The duration of the preparation varies with the situation. A prolonged preparation is destructive of surprise and gives the enemy time to take countermeasures. The length of the preparation is influenced also by the extent to which tanks are to participate in the attack and the role assigned to them. The duration of the artillery preparation may vary from 15 minutes to several hours.

The nature of the artillery preparation depends upon its mission. Concentration of effect is greatly favored by dividing the preparation into *phases*.

The object of the *first phase* of the preparation is to neutralize the defender's artillery, destroy the most important hostile agencies of command and fire control, isolate the defender's forces from the rear, disrupt assembled hostile mechanized forces and protect our troops from the enemy's counterpreparation fires. Artillery fire of the first phase comprises counterbattery fire; destruction fire on command posts, observation posts, and signal communication installations; interdiction and destruction fire on enemy routes of communication; destruction fire on mine fields and hostile obstacles; and concentrations on the hostile defense areas and assembled mechanized units.

In the *subsequent phase* of the preparation, sufficient artillery continues counterbattery fire to maintain neutralization of the hostile artillery. The fire of the mass of the remaining artillery is concentrated on the hostile defense areas.

■ 534. During the preparation, other supporting weapons fire on sensitive points in the advanced zone of resistance. Supporting bombardment aviation is concentrated against hostile artillery, signal communication centers, and reserves, with particular attention to mechanized units which cannot be covered effectively by artillery. During the last few minutes of the preparation bombardment aviation is concentrated upon the hostile defense areas.

CONDUCT OF THE ATTACK

■ 535. The attack is characterized by the positive action of fire and movement, combined and controlled to create a preponderance of force in the decisive direction.

■ 536. The attacking echelon advances from its final assembly positions so as to cross the line of departure at the prescribed time. Any mass formation of units runs grave risks of incurring heavy losses from hostile counterpreparation fires and air attack. The leading echelon is therefore thin initially; its fire power is gradually built up as the enemy discloses his plan of defense.

When *fire superiority* has been gained, the leading echelon closes to assaulting distance.

■ 537. Superiority of fire rests chiefly upon the mutual support of units in the attacking echelon, and the coordination of their action with the fire support of artillery, bombardment aviation and supporting tanks. It depends not only on volume of fire but also on its direction and accuracy.

Fire effect is increased by enfilade action. Flanking or oblique fire is especially effective when frontal fire is delivered simultaneously against the same objective. A convergent fire forces the enemy to defend himself against attack from several directions and creates a powerful moral as well as material effect.

Units seek to gain flanking fire by enveloping action. Flanking fire is also secured through the lateral echelonment of supporting weapons with respect to the units they support. Heavy machine guns, from positions in adjacent zones of action, deliver oblique fire over the troops in their front and protect the flanks of troops in the attack echelon. Light machine guns of rifle units follow the leading elements closely in order to take advantage of and deliver flanking fire through the gaps along the front. Units which have succeeded in gaining advanced positions deliver flanking fire across the front of adjacent rearward units.

Lateral echelonment of artillery for purposes of flanking fire increases the difficulties of fire control and of liaison between the artillery and supported units. The fire of supporting artillery is more reliable and effective when its positions and observation posts are in the zone of action of the supported unit.

■ 538. The attacking echelon advances to assaulting distance of the hostile position under its own and supporting fires. Until the main hostile resistance is broken, attack units advance by bounds to successive terrain lines on each

of which the fire support for the next bound is organized. Fire and movement are alternated in such manner that an attack unit, whose advance is made possible by the combined fire of adjacent and supporting units, moves forward to an advanced position and by its fire from that position assists the advance of the adjacent units.

■ 539. Troops transported by air may be employed to seize, hold, or destroy objectives which contribute directly to the success of the main attack.

■ 540. Artillery and other supporting weapons insure continuity of support by displacing forward in groups (by echelon), while the bulk remains in position and maintains fire. Fire is lifted successively to more distant targets as the attacking echelon becomes endangered by it. When supporting artillery, heavy machine-gun, and mortar fires are lifted from the hostile position to permit the attacking echelon to close with the enemy, the loss of this support must be compensated for by the increased fire of the lighter weapons and by the cooperative action of tanks. (See ch. 16.)

■ 541. Artillery supports the attack through the depth of the hostile position by successive concentrations in accordance with the requests of the supported commanders. Concentrations of artillery fire are regulated to bring the greatest possible volume of fire on objectives of decisive importance at the critical moments of the attack. Attack units take immediate advantage of artillery fire effect to gain ground to the front. The artillery is prepared for early movement forward to maintain close support as the attack progresses. Essential fire missions of units being displaced are distributed to units in position.

■ 542. Artillery must employ all means at its disposal (observers, liaison sections, airplanes, wire and radio communication to attack units) to obtain exact information of the location of the front line. The attacking units must cooperate by employing all means of transmitting information to the artillery (display of panels, pyrotechnics, and various other means of signal communication). When uncertain as to the location of the attack echelon, direct support artillery takes immediate steps to establish close contacts with those elements.

■ 543. During the attack, the supporting fires are concentrated against the fronts where the attacking echelon is making the greatest progress. Artillery fires are supplemented by fires of other supporting weapons. The fire of these weapons is used to increase the density of the artillery fire or is placed on those areas and targets which can not be effectively engaged by the artillery. When the attack echelon arrives close to the hostile position, the fire of all artillery, including that in general support, is concentrated on rearward hostile defense areas.

■ 544. The primary purpose of close supporting fire is to prevent the enemy from manning his defensive works in time to meet the assault. Its progression to successive objectives is arranged between supporting and supported commanders. It may be regulated by a time schedule based upon the probable rate of advance of the attacking troops, by signal given by assaulting troops, or by a time schedule based upon a desirable duration of the fire.

Other fire is placed on critical points in the hostile position to protect the attack echelon from hostile long-range and flanking fires and from counterattack. It is lifted to correspond with the advance of the attacking echelon.

■ 545. Each attack unit uses the close supporting fires of its artillery and other supporting weapons to close with the enemy and to push on to its successive objectives without deviating from the prescribed general direction of attack.

■ 546. Combat aviation supports the attack through the depth of the hostile position. Commanders of the supporting aviation thoroughly familiarize themselves with the terrain in the zone of the attack. Supporting combat aviation is concentrated over that part of the hostile front where the attack seeks decisive results. Its operations are coordinated to provide the maximum support at the time the ground forces launch the attack.

■ 547. The attack must not permit its advance to be long arrested by hostile chemical concentrations. Contaminated terrain which cannot be avoided is posted and passed with the protection of gas masks.

■ 548. Whether the main attack is based upon an envelopment or a penetration, the battle generally develops into local

conflicts along two opposing fronts. During the course of battle the combat action of units may undergo a change as between envelopment and penetration. A force that has successfully enveloped the enemy's flank may have to make a frontal attack to defeat a hostile reserve or may find a favorable opportunity to attack the hostile resistance in flank. In a penetration, once minor resistances have been overrun, the outflanking action of small units is the most effective means of reducing the stronger hostile defense areas.

■ 549. An attack seldom is executed exactly as planned. As long as the enemy has any freedom of action, unexpected difficulties are encountered which culminate in a crisis. The approach of this critical phase of the attack must be recognized by the commander so that timely measures can be taken to shape the course of action to secure a favorable outcome or to prevent a reverse. (See pars. 476-482.)

■ 550. When the attacking echelon approaches assaulting distance, observation aviation is employed to observe especially the situation of our own and the hostile advanced elements. Observers on this mission report to the division commander and the commanders of infantry units the points where the attack is stopped and those where penetrations have been effected, hostile counterattacks, and other features of the situation of our own and the hostile advanced elements. Other observers continue to inform higher commanders concerning developments farther in rear of the battle front such as shifting of hostile reserves, arrival of reinforcements, train movements, and the like. From these reports and other information, commanders direct the movements of reserves toward those portions of the hostile front that offer the greatest prospects for decisive success and to support the attacking troops in repulse of counterattacks. Combat aviation is effectively employed to attack enemy reserves and counterattacking forces.

■ 551. In an attack of a stabilized front, the approach has already been effected and the attack opens with a coordinated assault. The hour of the assault is fixed by the commander of the whole front from which the assault is to be launched. The exact day and hour is kept secret until the latest practicable moment.

■ 552. On a stabilized front, the period during which the opposing forces have been in contact makes available more detailed information of the enemy's defensive dispositions. The completeness of information will depend upon the length of time the front has been stabilized and the efficiency of intelligence measures. Available information is augmented by continuous reconnaissance. Reconnaissance throughout preparation for the attack is conducted in such manner that the appearance of normal activity is maintained. Information is disseminated in the form of intelligence summaries, maps, and air photographs.

THE ASSAULT

■ 553. Against a strong resistance and well-organized defense, the superior commander will prepare the assault of the first hostile organized line of resistance by concentrating the firepower of all supporting weapons, including combat aviation, to neutralize the enemy and wear down his power of resistance before launching the assault. After the first on-rush, a series of local assaults delivered by units of varying strength on their own initiative continues the action. Each unit delivers its assault at the earliest moment that promises success.

The commander of the unit will have arranged to deliver the assault on a time schedule, or will notify the supporting weapons, by a prearranged signal, that he is about to assault. The intensity of supporting fires is increased. Under cover of the supporting fire, the assault unit advances close to its objective. When the supporting fires are lifted from the objective the assault unit overruns the hostile resistance in a single rush. Any delay in launching the assault after the fires lift allows the enemy to man his defenses.

CONTINUATION OF THE ATTACK

■ 554. After the assault of an organized position the attack often breaks up into a series of separate combats which are continued throughout the depth of the hostile position. These combats are directed by subordinate commanders within their zones of action and are supported by all the means at their disposal. The first task is to capture assigned objectives. Resistances are reduced by fire or are outflanked.

The utmost importance attaches to maintaining the continuity and direction of the attack by the timely movement

and employment of reserves and by the timely displacement of the artillery and other supporting weapons. Reserves are disposed behind points where the greatest progress is being made, to protect the flanks of the leading units and support them in the repulse of counterattacks. Artillery and air observers search for probable assembly areas of hostile reserves so that enemy preparation for counterattack may be broken up by artillery fire and air attack. If the attack is unable to make further progress, the captured terrain is organized for defense and held until the attack can be continued.

■ 555. The enemy's reaction following the successful assault of his main line of resistance, road conditions, and the possibility of maintaining ammunition supply determine when and in what strength the artillery will be moved into advanced positions.

Artillery executes its missions with the fewest possible changes of position. Frequent changes of position reduce the volume of fire support. The occupation of new positions and renewal of fire require considerable time. Nevertheless, change of position should unhesitatingly be made when fire effect or deficiency in liaison with the attacking echelon requires it. Changes of position generally are effected by echelon after timely reconnaissance of advanced position.

Artillery promptly fires upon enemy troop assemblies, troops forming for counterattack, and on any rearward position on which the enemy attempts to reconstitute his defense.

■ 556. If the tide of battle turns against the enemy, he may endeavor to disengage his forces and renew the defense on a rearward position or he may fight a delaying action until battle can be renewed under conditions more favorable to him. Ordinarily, the enemy will strive to hold out until nightfall and effect his withdrawal under cover of darkness.

Frequently the enemy will disclose his intentions to withdraw. Attacking troops must exercise great vigilance in observing the conduct of the enemy in their front, press their attack with energy and maintain close contact with him. Observation aviation searches the rear areas for indications of retrograde movements of artillery and trains.

■ 557. If the enemy succeeds in withdrawing his major forces from action, the commander intensifies reconnaissance to obtain the necessary information on which to decide what

line of action to follow. Aggressive action may prevent the enemy from reconstituting his defense on a rearward position. If the enemy succeeds in occupying a new position during darkness, a renewal of the attack in force must be delayed until daylight.

It may be of great advantage to regroup the attack forces during the advance to the new position and launch the main attack on another part of the front. Effort is made to exploit the moral ascendancy by a quick and powerful blow before the enemy can reconstitute his defense. The action of tanks or armored forces and combat aviation at this time may be decisive.

■ 558. If the enemy is fighting a delaying action on an extended front, the objective ordinarily will be attained more quickly by concentrating on a decisive part of the front and attacking with energy and dispatch. An attack pushed deeply and energetically through the hostile front will force the enemy to an early evacuation of the whole front.

■ 559. In case of a break-through, armored units penetrate deeply into the hostile position and attack the enemy's reserves, artillery, and command and signal communication centers. The gap is widened by attacking its flanks. Other mobile forces are sent through the gap to exploit the advantage gained and to attack the enemy in rear and prevent his escape. The maximum efforts of combat aviation are concentrated on supporting and cooperating with the forces exploiting the break-through.

■ 560. When the attack does not reach its objective or does not break through the hostile position during the day, foot troops intrench themselves at the points reached. The night is utilized to extend the advance. Strong patrols with machine guns are sent forward to occupy advanced positions. The foot troops advance and intrench in a new position under the protection of these patrols. Several advances of this character may bring the troops within assaulting distance of the hostile position. These night advances must be coordinated with the artillery and supporting combat aviation.

RELIEFS TO CONTINUE THE ATTACK

■ 561. In offensive combat, a relief may be necessary to continue the momentum of the attack with fresh or more ex-

perienced troops; to change the direction of the attack, or to extend an envelopment; or to initiate a strong offensive on a front where stabilization has existed.

■ 562. When a relief is necessary, warning orders are issued by each commander (higher commander, relieving unit, and unit to be relieved) to each of his subordinate units. Warning orders include: approximate hour the movement for the relief is to begin; zones in which relieving units are to operate; and the restrictions imposed upon reconnaissance parties as to size, routes, and hours of operation.

■ 563. Personal reconnaissance by the commander and staff of the relieving unit and prior conference with the commander and staff of the relieved unit are highly desirable. When neither is possible, relieving units move forward to attack without delay, reconnoitering as they go. As they move forward, commanders make every effort to locate commanders of units to be relieved.

■ 564. A plan is formulated and orders are issued covering the movement of relieving units. Fundamentally the operation is the same as the development of a command for combat. In the preparation of the plan, restrictions imposed by higher authority because of other traffic in the zone of advance to relief, the greater road spaces that may be required because of increased distances between units, the road net, and practicability of cross-country movement, must be considered. The plan must be flexible as to times and routes of movement. The size of the unit involved and the speed with which the relief must be conducted will govern the thoroughness with which the details of the plan are prepared.

■ 565. In accordance with the plan of the higher commander, commanders and staffs of both the relieving and relieved units arrange and agree upon such details as guides, use of roads, fire support to be furnished by the relieved unit, security measures which will be provided for the incoming troops by the unit to be relieved, transfer of the existing signal communication system, administrative matters, and the time command passes to the relieving unit.

■ 566. Units to be relieved furnish guides. Guides meet the relieving unit before it enters the area and conduct it to assembly positions. Whenever possible, guides are furnished for units down to and including the platoon.

■ 567. The plans for executing the relief must be in harmony with the plans for continuing the attack.

When the relief is executed in darkness, troops relieved are withdrawn promptly from the zone of action before the attack is continued. Artillery of the relieved unit (and frequently other supporting weapons) may be held in position to support the attack.

When the relief is executed in daylight, troops relieved or passed through remain in position and continue the fire support of the new unit until their fires are masked and until the attack has progressed far enough for the relieved troops to be assembled and reorganized without undue casualties.

■ 568. If the exact location of forward elements to be relieved is known, and if relief is effected at night, the line of departure for the attack is the line held by the forward elements. When the exact location of the most advanced elements of unit to be relieved is unknown, the line of departure must not be forward of the line held by most advanced elements whose location is known. In daylight and terrain permitting, a line of departure between the forward elements to be relieved and a covered position close in their rear may be better than a line coinciding with the front-line elements.

■ 569. To disclose the fact that a relief is in progress invites disaster—a heavy bombardment by air and artillery, a counterattack, or both, at a time when congestion and traffic circulation are doubled.

■ 570. In reliefs on a scale large enough to require more than a single night, troops, animals, and vehicles of the relieving unit are concealed during periods of visibility. The relief is carried out by echelon. To prevent the discovery of the relief through the capture of prisoners by the enemy during an intervening day or night, front-line elements are relieved during the last night preceding the resumption of the attack.

When the relief is made in daylight, woods, fog, and defilade are utilized in the approach. Smoke is placed on hostile observation posts and hostile forward elements. Mobility, ruses, feints, and demonstrations are exploited.

■ 571. During the course of the relief, artillery maintains its normal fires, but is prepared to execute counterbattery and protective fires along the front of the relief in the event of a counterpreparation or of attack by the enemy.

■ 572. The principal task involved in a passage of lines is the preparation for continuing the attack. Therefore, the incoming commander must assume command of the zone of action before his troops reach their attack positions.

SECTION IV

ATTACK FROM THE DEFENSIVE

PLANNED DEFENSIVE-OFFENSIVE

■ 573. A commander with an offensive mission may decide to assume the defensive initially because of temporary combat inferiority in numbers or dispositions, or to create a situation which will place the enemy at a tactical disadvantage and offer opportunity for a decisive counteroffensive. In either case, an early adoption of the offensive to attain the objective is contemplated. By inducing the enemy to attack first, the commander hopes to fix and exhaust him and then, when he is disorganized, to launch the counteroffensive.

This type of action demands the highest type of leadership and tactical skill and troops with a high order of training. The major problem for the commander lies in timing the attack.

■ 574. The selection, occupation, and organization of the defensive position conform to the general doctrines discussed in sections I and II, chapter 10, except that organization of the ground is not as complete as is required for a protracted defense and a larger proportion of the close-combat elements of the command are assembled concealed in a position favoring the execution of the contemplated counteroffensive.

■ 575. Conduct of the defense conforms to the doctrine discussed in section II, chapter 10.

As soon as the purpose of the initial defense has been accomplished, the counteroffensive is launched. Thereafter, the conduct of the action is that of the attack.

THE COUNTEROFFENSIVE

■ 576. A defending force frequently has an opportunity to adopt the offensive. When a general counterattack launched by the defender throws the attacker back following an apparently successful advance, or when a hostile attack breaks down in front of the main line of resistance, the enemy seldom will be able to withstand a determined counteroffensive. The enemy artillery fire still may be superior but his attacking echelon will be disorganized and signal communication in his forward area will be disrupted. If the defender seizes the initiative and passes to an offensive before the attacker can recover from his disorganization and can properly dispose his reserves, results often are decisive. The defense must be prepared to pass to the offensive and exploit the results of successful defensive action.

■ 577. The general doctrines governing the preparation for and conduct of an attack are applicable to the counteroffensive.

SECTION V

PURSUIT

■ 578. The pursuit is launched when the enemy is no longer able to maintain his position and endeavors to escape by retreat. A commander recognizes success by the continued advance of his troops in a decisive direction and the capture of critical objectives; by the number and morale of captured prisoners; by the number of abandoned weapons; by the numbers of hostile dead; by the diminution of hostile artillery fire; by the relaxation or cessation of hostile countermeasures; and from reports that the enemy is withdrawing.

■ 579. When a commander recognizes that the enemy is having difficulty in maintaining his position, he utilizes all means to maintain the continuity of the attack and exert a relentless pressure on the defeated enemy.

Effective pursuit requires leadership and exercise of initiative to the highest degree in all echelons of command. All commanders in the attack echelon spur on their troops and clinch the advantage with their reserves. Pursuit of a defeated enemy is pushed to the utmost limit of endurance of troops, animals, and vehicles. No opportunity is given him to reorganize his forces and reconstitute his defense.

■ 580. The object of the pursuit is the annihilation of the hostile forces. This can seldom be accomplished by a straight pushing back of the hostile forces on their lines of communication. *Direct pressure* against the retreating forces must be combined with an *enveloping or encircling maneuver* to place troops across the enemy's lines of retreat. *Encirclement of both flanks* of the retreating forces or of their separate elements is attempted wherever conditions permit.

By the coordinated employment of every available agency of destruction and terrorization, the shaken morale of the defeated enemy is converted into panic. The incipient dissolution of his organization is transformed into rout.

■ 581. In anticipation of the time for launching the pursuit the commander causes preparatory measures to be taken. These measures include necessary plans and orders in all echelons. Reserves are regrouped. Artillery and other necessary units are attached to the direct pressure forces for the pursuit. Distant objectives are assigned to the principal tactical groupings. Missions are assigned to combat aviation and to the artillery in general support to obstruct movement on hostile avenues of withdrawal. Preparations are made for launching one or more forces of *great mobility* in encircling maneuvers to strike the enemy in flank and rear and cut off his retreat. General reserves are especially appropriate for this mission. (See par. 507.)

■ 582. The pursuit is conducted on a broad front. Motor transportation is employed to expedite the movement of foot troops.

Troops before whom the enemy is giving way send in their reserves to gain his flank and rear or break through his covering troops.

■ 583. The forces engaged in the direct pressure and in the encircling maneuvers are assigned directions, zones of action, and objectives designed to bring the pursuit to a decisive conclusion. Such directions and zones of action may be around the flanks or through the wider gaps which defeat has opened in the hostile dispositions, or may be a continuation of the existing zones of action.

■ 584. Supporting combat aviation concentrates on lines of communication centers in the enemy's rear area, on hostile columns in retreat and on hostile reserves endeavoring to

reconstitute the defense. It blocks defiles on the enemy's line of retreat and disrupts traffic on the main roads and railroads in the enemy's rear area.

Observation aviation reconnoiters the roads in the enemy's zone of retreat to keep contact with retreating columns and to locate any movement of hostile reinforcements, and keeps ground commanders informed of the hostile activities and movement within their zones of action.

■ 585. The employment of artillery is based upon the maximum exploitation of the mobility of lighter pieces and the long range of the heavier types. So long as the withdrawing enemy can be engaged with observed and planned fire, a portion of the artillery remains in position to fire on the more distant targets. Long-range artillery working with observation aviation and balloons continues its fire on the enemy lines of communication up to the limit of its range.

The artillery attached to the pursuing forces, in addition to its supporting action, fires on hostile elements attempting to form columns in rear of the enemy's covering troops, and gradually takes over the missions of the artillery remaining in position.

■ 586. The purpose of the encircling maneuver is to get in rear of the defeated enemy and halt his retreat so that he may be destroyed between the direct pressure and encircling forces.

When practicable, mobile forces in the encircling maneuvers advance along roads paralleling the enemy's line of retreat to cut him off at defiles, bridges, and other critical points. When the encircling forces cannot outdistance the enemy they push through to a critical locality and engage the enemy's main forces in flank.

Combat aviation; armored, mechanized, and motorized units; and cavalry are employed in the encircling maneuvers.

Troops transported by air for employment at critical defiles deep in the hostile rear pending the arrival of more powerful, mobile encircling forces may contribute decisively to a successful pursuit.

■ 587. The advance in the decisive direction must be maintained. Hostile rear guards or forces on flank positions must not turn pursuing forces from the decisive direction. Every effort must be made to block the main hostile force. When

necessary, a new encircling force to continue the pursuit is constituted.

When the enemy succeeds in establishing himself in a position from which he cannot be dislodged quickly, the superior commander takes prompt measures to coordinate the attack again, supporting it with all available means. (See pars. 557 and 558.)

■ 588. The enemy's attempts to organize his retreat under the cover of darkness must be frustrated. Under no circumstances must he be allowed to break contact. Units which have advanced without serious opposition continue their march during the night. Other units organize successive limited attacks against the enemy in their front.

During a night pursuit, the leading detachments push their advance along all available roads, followed by the main pursuing forces. The attached artillery advances by echelon, going into successive positions from which it can interdict the enemy's routes of retreat by map firing or by fire directed by observers which accompany the leading detachments. Prompt report is made when objectives are reached so that artillery fires may be coordinated.

The effect of artillery fire is complemented by combat aviation which searches enemy routes of retreat with flares, and bombs enemy columns and critical points in the enemy's rear area.

■ 589. Pursuit requires extensive reliance upon radio for communication with the leading troops. The importance attached to hostile interception of radio communication in other situations does not obtain in equal degree in pursuit. Effort is made to intercept the enemy's radio messages. The construction of wire lines is concentrated along the more important axes. Command posts or advance message centers are established close behind the leading troops.

■ 590. Adequate provision for the supply of ammunition and motor fuel to the pursuing troops is essential to the success of the pursuit. The commander must relieve the pursuing columns of all worries concerning supply and evacuation.

SECTION VI

SECURITY IN THE OFFENSIVE

■ 591. Success or failure of an offensive is dependent in a large measure upon the action taken to protect the command from hostile reaction. Open flanks are highly vulnerable. The best security is to keep the enemy so heavily involved that he has no time or means available to endanger the success of the attack. Security of attack forces is assured by a timely search for information in all directions from which a hostile threat may come, by the proper disposition of security forces of ample mobility and combat power, and by prompt dispatch of accurate information and orders to security forces. This is particularly true in security against hostile forces of great mobility such as air, tank, motorized, and cavalry units. In offensive operations, the service of security is performed in accordance with the general doctrines discussed in chapter 6.

■ 592. In offensive operations, the mass of available means for defense against air and mechanized attack is disposed to favor the main attack. The combat means for defense against air attack are supplemented by utilization of cover, defilade, dispersion, and night movements to the maximum. The combat means for defense against attack by tanks or other mechanized forces are supplemented by utilization of natural and artificial obstacles to protect the flanks and rear of the command, by dispersion, and by night movements. (See chs. 6 and 10.)

■ 593. Antitank guns in each echelon of troops are disposed to cover the most likely avenues of approach of hostile mechanized units; the bulk of the antitank guns are held mobile, prepared to meet a hostile mechanized attack at any point. Protection against mechanized attack is best assured by meeting the attack with the combined action of tanks and mobile antitank guns supported by every available and effective means of fire support, to isolate and destroy the hostile mechanized forces.

■ 594. In offensive operations, the greatest need for security exists during critical phases of the battle. Security is enhanced by meeting possible threats with heavy fire before they can develop. The action of combat aviation against

highly mobile threats and against close, less mobile threats is particularly effective, especially if hostile troops or vehicles are in close formation.

SECTION VII

TERMINATION OF OFFENSIVE ACTION

■ 595. An offensive action once begun is halted only by hostile reaction or by other elements in the situation which demand it.

If, during the course of an attack, it becomes necessary to pass to the defensive, the leading foot elements intrench themselves on the ground then held. The leading echelon then is thinned out and forces are redistributed to organize the defense in depth. It may be necessary to move some elements to the front or rear for short distances to establish the defense on favorable terrain and secure flanking fire. Any major adjustments attempted in daylight will probably result in heavy casualties. The general position of attacking units is maintained until darkness, when the selected defensive position is occupied and organized as described in chapter 10.

If the situation demands major adjustments in daylight, they are accomplished under protection of fog or smoke, and of a maximum of fire support by artillery, combat aviation, and other supporting weapons.

■ 596. If, during the course of an attack, it becomes necessary to break off the action and withdraw, the command initially passes to the defensive. The completeness of the defense is dependent upon the situation and whether the initial defensive and the withdrawal must be executed in daylight or darkness. Thereafter, the withdrawal is executed according to the doctrines discussed in chapter 11.

CHAPTER 10

THE DEFENSIVE

SECTION I

ORGANIZATION FOR DEFENSE

GENERAL

■ 597. The general object of defensive combat is to gain time pending the development of more favorable conditions for undertaking the offensive, or to economize forces on one front for the purpose of concentrating superior forces for a decision elsewhere.

Under the first of these objects, a commander may assume the defensive pending the arrival of reinforcements, or he may be thrown on the defensive by inferiority in numbers, disposition, or training. He may take up a defensive position and invite attack as part of a deliberate plan to win the battle by a counteroffensive.

Under the second object, the defensive is usually expressed in the mission received from higher authority. This mission may be to hold a vital area pending completion of the maneuver of other forces to protect a flank, or to contain an enemy force while an offensive is being conducted on another part of the front or in another theater.

■ 598. Our defensive doctrine contemplates the organization of a *battle position* to be held at all costs and the use of covering forces to delay and disorganize the advance of the enemy and to deceive him as to the true location of the battle position. (See par. 610.)

RECONNAISSANCE AND SELECTION OF POSITION

■ 599. The mission, the situation, and the terrain limit the choice of localities where the defense may be offered.

Commanders of large units usually determine the general location of the battle position from the map.

The position on which battle is offered must conform to the object of the defense and should facilitate future maneuver without jeopardizing the success of the defense. It must

force the enemy to a direct attack or a time-consuming maneuver, as a position that can be readily avoided has no defensive value. A flank position must draw the enemy from his original direction of advance.

■ 600. Reconnaissance of the position is as detailed as the situation permits. It includes a study of the principal routes of hostile approach, terrain available for hostile observation, and the corridors most advantageous to the hostile attack. A study of the terrain in which the enemy must carry out his attack will give valuable indications of his possible assembly positions, the location of his artillery, the terrain favorable for attack by his mechanized forces, and the area most advantageous for his main attack.

■ 601. If contact with the enemy has not been made, the commander ordinarily is free to make a detailed *reconnaissance of position*, select the terrain on which to defend, and decide on the best distribution of troops. In this case, the command usually is developed into an assembly position preliminary to deployment for defense.

■ 602. Basing his action on his mission, his personal reconnaissance, the reconnaissance reports of his subordinates, and the available information of the enemy and friendly troops, the commander forms an estimate of the enemy's capabilities and the probable front of hostile attack, and makes his decision regarding the location of the main line of resistance and the regimental reserve line, the employment of the artillery, the assignment of sectors, the strength and location of the general reserve, the antimechanized defenses and other measures necessary for security. Successive reconnaissances by lower commanders fix on the ground the distribution of smaller units and the location of their combat emplacements. Exact information as to the trace of the main line of resistance is furnished to the artillery.

■ 603. In the hasty assumption of the defensive from a march formation, reconnaissance usually must be curtailed and the defense assumed directly from the development.

Depending on the mission and the situation, it may be advisable for a commander initially to attack to seize terrain to his front on which to organize the battle position. In other situations he may employ a covering force, organizing the battle position on terrain in rear.

■ 604. *Continuous reconnaissance and observation* of the enemy's dispositions are conducted to secure the earliest possible indications of the enemy's offensive preparations. Air reconnaissance provides the information concerning the situation in rear of the enemy's leading elements.

■ 605. The character of the *terrain* exercises a decisive influence on the selection of position. Ridges and valleys generally parallel to the front of advance constitute obstacles to the progress of an offensive and are natural lines of resistance for the defense. Such ridges often afford observation and fields of fire favorable for a defense in depth.

Natural obstacles (e. g., river lines, woods, swamps) are important factors for consideration, especially if the situation requires that protective measures be taken against mechanized units, or other mobile forces, such as horse cavalry or motorized units.

Commanding elevations and ridges delimit the compartments of terrain and form the framework of the system of observation, command, and fire control in combat. They determine directly the location of the observation posts and positions of the artillery and other supporting weapons, and indirectly the location of defensive and assembly positions.

As a general rule, long gentle slopes afford better conditions for defense than abrupt elevations. However, positions along commanding heights are suited for delaying action.

■ 606. The *battle position* is so selected as to use the terrain to the greatest advantage. The extent of the position must be appropriate to the available troops.

The most important terrain factors are—adequate artillery observation, good fields of fire, concealment from hostile observation, and the presence of natural obstacles. The relative importance of these terrain factors depends upon the strength, composition, armament, and mission of the defending force, together with a consideration of the enemy's capabilities.

In selecting the forward limit of the battle position, the defender seeks terrain which will permit the most effective employment of the fires of artillery and other weapons. Clear fields of fire for small arms are important and usually lead to its location on a forward slope. Consideration of concealment may, however, make it desirable to select a reverse slope.

Such a location is practicable when possession of the crest to the front is not essential to the observation of artillery fire.

When the forward limit of the position is on the forward slope, the defense areas of front-line battalions may be extended to the rear to include the reverse slope. When it is located on the reverse slope, front-line battalions establish strong detachments from their reserves on the forward crest to fire on attacking troops during their approach to the position.

Observation to the limit of range of the weapons is desired in front of the main line of resistance, as well as within the battle position. Adequate observation posts for artillery are essential. The battle position must be so located that the essential observation will be retained even though the enemy succeeds in penetrating into the position.

Maximum advantage is taken of *natural and artificial obstacles* to stop attack by mechanized units or limit the directions of their movement. Towns, villages, and cities have considerable defensive strength against mechanized attack. They are, however, vulnerable to air attack, especially by incendiary bombs.

■ 607. All parts of a position will not have the same defensive strength. Avenues of approach which enable the attacker to reach the position under concealment or cover are sources of weakness. These avenues of approach may, however, be unsuited for enemy tank attacks. Clear fields of fire over which the enemy must advance for some distance under the defender's fire are sources of strength in a defense against foot troops, but may furnish excellent terrain for hostile mechanized attack. The defender must be prepared to meet that form of attack which the terrain favors.

■ 608. A position combining all defensive advantages will seldom be available. The weak points of a position are strengthened. A short field of frontal fire is compensated by dense flanking fires and heavy mortar and artillery concentrations; exposure to hostile observation, by distribution in depth and construction of dummy works and masks; deficient observation, by increased strength of local garrisons. Persistent chemicals, demolitions, and mines can be used effectively to strengthen exposed flanks and to contaminate and block covered avenues of approach leading into the position.

■ 609. The defense, no less than the offense, must effect *surprise*. The visible lines of a defensive system must not betray the defensive dispositions. They should mask the real defensive organization. Every available means must be employed not only to mislead the attacker as to the location of the position but also as to the strength and disposition of the defending force. Deception, delay, and security are obtained through the use of covering detachments.

TACTICAL ORGANIZATION

■ 610. The defense is built around a series a tactical localities, the retention of which will insure the integrity of the position. A battle position comprises a zone of resistance consisting of a number of mutually supporting defense areas disposed irregularly in width and in depth, each organized for all around defense with trenches, obstacles, and emplacements. Tactical unity is maintained in each defensive area.

A line joining the forward edge of the most advanced organized defense areas is called the *main line of resistance*. It is the line in front of which all elements of the defense must be able to concentrate their fire to break up the hostile attack. The contour of the main line of resistance is thus irregular in trace, with elements on it sited for frontal and flanking fire. A line designated to coordinate the locations and actions of the regimental reserves in the battle position is called the *regimental reserve line*.

■ 611. Between the main line of resistance and the regimental reserve line, company supports and battalion reserves organize the ground. The distance between successive echelons on the battle position (units on the main line of resistance, company supports, battalion reserves, and regimental reserves) should not exceed the effective range of small-arms fire. It should, however, be sufficiently great to prevent any echelon from falling into the zone of dispersion of artillery fire directed against a more advanced echelon. This distribution in depth diminishes the effect of hostile fire and provides for continuity in defensive fires and movement against the enemy, even though he succeeds in penetrating into the battle position.

■ 612. The natural defensive strength of the position has a direct bearing upon the distribution of troops for its defense, both as to frontage and depth. Portions of the front which have great defensive strength can be held with fewer men, or units can be assigned wider sectors, while the reverse is true in weak portions of the front. There is thus a variation in the troops which can be made available for reserves. Close terrain and exhausted troops require a greater density of troops forward toward the main line of resistance.

■ 613. The *width of sectors* assigned to infantry units varies with the natural defensive strength of the various parts of the position, the relative importance of the sectors, the degree of control required, and the number and strength of units available. The necessity for control and the character of fields of fire affect the intervals which may be permitted between tactical localities. Some variation in the width of sectors may arise from the necessity for adjusting them to fix responsibility for defense of terrain corridors. By adaptation of the width of sectors to their natural strength, there results an economy of force which enables the commander to hold out the maximum strength for use as reserves.

■ 614. Sectors are delimited in orders by *boundaries*—lines indicated on the map or ground extending from rear to front. Boundaries are located so that there will be no question of the responsibility for the defense of the key terrain which dominates a critical avenue of hostile approach. While it is frequently impossible to include both the avenue of hostile approach and the adjacent dominating terrain in the sector of the small units, the boundaries of sectors assigned to battalion and larger units should be located to insure unity of defensive dispositions and fires in defense of these critical localities.

Boundaries are extended forward of the battle position to the limit of the range of the weapons with which the unit is equipped. Boundaries may be extended forward to include the outpost line in order to delineate the outpost responsibility of units on the battle position. The extension of boundaries to the rear is influenced largely by the existing road net and routes for movement within the position.

■ 615. The division commander determines the distribution of the *division artillery* and its subdivision for combat (direct

and general support). Since the rapid concentration of artillery fire on important objectives is essential to a successful defense, when the situation permits, control of the artillery under the direction of the division commander is preferable. Every effort is made to meet the hostile main attack with the mass of the artillery fire.

The *echelonment in depth* of the artillery takes into consideration the range of the various weapons, the location of the targets, and the possibilities of neutralization by hostile counterbattery fire. The echelonment is limited by the considerations that the entire artillery must be able to concentrate its fire in close support of the main line of resistance, that the foremost echelon can fire deep in the hostile zone, and that the rearmost can support the rear defense areas of the battle position.

■ 616. The battle position is protected by outposts whose mission is to provide time for the main force to prepare itself for combat, to deceive the enemy as to the location of the battle position, to force early development by the enemy, and to provide a deeper view within the terrain over which the attacker will advance.

Whenever practicable the outposts are located at sufficient distance from the main line of resistance to prevent the occupying forces from being taken under *observed* fire by hostile light artillery. Outposts will ordinarily not be established beyond the effective range of the light artillery of the battle position.

The outpost line of resistance and the ground between the outpost and the battle position are organized for delaying action to the extent permitted by the time and labor available.

■ 617. When forced to withdraw under hostile pressure, the outposts conduct a *delaying action*. Every effort is made to deceive the enemy as to the exact location of the battle position. The withdrawal of the outposts must be so arranged that they neither will interfere with nor be endangered by the fire from the main position. Coordination is facilitated by the use of prearranged signals and previously designated routes of withdrawal.

■ 618. Whenever practicable, an advanced *covering force* is employed in front of the outpost. The mission of this covering force is to inflict the maximum delay on the enemy, to

permit the defender to utilize advanced artillery observation, to permit the laying of mines, demolitions, and obstacles in front of the outpost and the battle position, and to deceive the enemy as to the actual location of the battle position. Similarly, such forces may be employed on exposed flanks.

■ 619. Natural terrain obstacles, such as water courses, heavily wooded areas, and swamps, are particularly favorable areas for the operations of advanced *covering forces*.

The initial position of the advanced covering force and the terrain between this force and the outpost are organized to the extent practicable in the time available.

■ 620. The advanced covering force should be mobile. The use of cavalry, mechanized and motorized troops and engineers is indicated. It should have strong artillery and anti-tank support. Organic artillery may be reinforced by artillery from the main force, temporarily emplaced in advance of the battle position.

■ 621. The advanced covering force fights delaying action in its withdrawal. It avoids serious engagement with the enemy.

■ 622. The direction from which the main attack may be expected and the commander's plan of maneuver determine the initial location of the *reserve*. According to circumstances, it is echeloned for protective purposes in rear of an exposed flank, held in a position in readiness from which it can deliver a prepared counterattack, or so disposed that it can launch the counteroffensive by striking a hostile attack in flank.

■ 623. Large *horse cavalry units* should rarely be called on to defend a position. Cavalry seeks to accomplish defensive missions by delaying action or by defensive-offensive tactics. When required to defend in position, it operates in general as does infantry.

■ 624. *Corps and division cavalry* is employed on reconnaissance missions with especial attention to locating the mass of the hostile force. It may be reinforced by motorized infantry, artillery, and engineers, and employed as a mobile covering detachment. (See par. 598.) During battle it continues reconnaissance and security missions, especially to the flanks. It may be held in mobile reserve or used to harass enemy flanks and rear when the situation permits.

■ 625. *Mechanized* units are not normally employed to hold defensive positions. They may, however, be employed well forward, supported by combat aviation, to cover the occupation of a position by other troops. They employ delaying action to accomplish this mission. (See ch. 11.) Should the situation demand it, they may be required to hold an area pending the arrival of other troops. In performing such a task, they operate similarly to horse cavalry except that larger reserves are withheld initially for the purpose of counterattack. When supporting infantry, they constitute a powerful striking force and are held initially in reserve prepared for rapid entry into combat when an opportunity for a counterblow is presented.

■ 626. *General reserves* may be called upon to relieve units on the battle position, participate in a major counterattack or counteroffensive, extend the flanks of the battle position, or occupy a rear position.

Prior to commitment to a definite line of action, they are held mobile, prepared to participate in battle in accordance with the plan of maneuver of the superior commander. While so held, they are disposed for all around defense against attack by hostile mechanized forces which may succeed in passing through or around the battle position. Necessary measures are taken for protection against hostile aircraft and for countering an attack by troops transported by air.

ORGANIZATION OF FIRE

■ 627. Coordination of the fire of the infantry, artillery, antitank, antiaircraft, and other weapons is carefully planned and expressed in orders. Plans provide for bringing the enemy under effective fire as early as practicable unless the situation requires that fire be withheld to obtain surprise, and for so regulating the intensity of the fire that the enemy is subjected to progressively heavier fire as he approaches the defensive position.

■ 628. The organization of systematic *flanking fire* by machine guns supplemented by other small arms constitutes the basis of defensive dispositions. Adjacent units, in addition to defending their own fronts, mutually cover one another's fronts with flanking fire. Dead spaces in bands of machine-gun fire are covered by the fire of other weapons. Fire effect

is increased by obstacles which hold the enemy under frontal and flanking fire. Sectors of the defensive position especially exposed to hostile fire may be left unoccupied, except at night and during periods of low visibility, and defended by flanking fire from adjacent sectors.

Machine guns are distributed in width and depth in each battalion defensive area to take full advantage of terrain. As far as practicable, their fire should cover the entire front of the main line of resistance with continuous bands of fire. Some machine guns are sited to take under flanking fire hostile elements which succeed in penetrating the main line of resistance. Some of the heavy machine guns are located where they can develop long range fire during the hostile approach without disclosing the location of the main line of resistance.

Artillery fire is coordinated in the defensive plan of fire and is especially concentrated on the critical localities and on ground which is dead to or beyond the range of the fire of other supporting weapons. The effective control of this fire requires good observation and efficient signal communication.

■ 629. All possible measures are taken to insure security against mechanized attack. *Antimechanized defense* is organized throughout the depth of the position. The main effort is made in areas which are favorable to the employment of mechanized forces. Battalion and regimental antitank guns from concealed positions defend the forward part of the battle position, while antitank weapons of higher units are echeloned farther in rear. Positions and routes for these weapons are reconnoitered and the guns are held in readiness prepared for rapid movement to any threatened part of the front. (See also ch. 6 and sec. V, ch. 10.)

Through a judicious combination of antitank weapons and obstacles, aided by artillery fire, combat aviation, and tanks, attacks by mechanized forces are broken up and halted as soon as they are disclosed.

■ 630. The division artillery commander prepares the general plans for the employment of artillery in accordance with instructions of the division commander. Coordination between artillery fires and those of other weapons is essential. It is effected principally through liaison between artillery units and the units they are designated to support. The close sup-

port of the main line of resistance is a governing consideration in the formulation of all artillery plans.

■ 631. The *artillery plan of fire* is based primarily upon the execution of a counterpreparation to break up or cripple the hostile attack before it can be launched. Fire is not opened by the mass of the artillery until targets of sufficient importance are disclosed.

It is important to take hostile artillery under fire at an early moment, to interdict hostile routes of approach, and to dislocate the hostile system of command and fire control.

The artillery of the attacker is most vulnerable from the moment it comes within range of the defender's artillery until it has completed its deployment. During this period, it constitutes one of the principal targets of the defender's artillery fire and aviation. The fire of all available artillery is concentrated to cripple the hostile artillery before it can get into action. *Counterbattery* continues to be the principal mission of a portion of the artillery, especially the medium artillery, throughout the battle.

The corps gives the division instructions regulating the employment of the division artillery in the execution of its more distant missions. The corps reinforces the action of the division artillery and extends its sector of fire in depth by the use of the artillery at its disposal. Long-range destruction and interdiction fire is directed especially on sensitive points in the enemy's rear areas and on his lines of communication (bridges, crossroads, and supply establishments).

■ 632. *Combat aviation* extends in depth and reinforces the fire of the artillery. Air attack against hostile ammunition and other supply establishments, airdromes, railroad installations, and bridges have important effects in delaying or dislocating the hostile preparations for attack. Other remunerative targets for combat aviation are enemy columns, artillery in position, reserves, and mechanized forces.

■ 633. *Antiaircraft artillery* is disposed initially to protect the organization and occupation of the battle position.

When the commander has determined on what front the enemy is making his main attack, the antiaircraft artillery concentrates its efforts on preventing air observation and attack on the threatened parts of the defensive position and on protecting the employment of reserves for counterattack.

If sufficient antiaircraft artillery is available, some units are assigned to the defense of important roads and installations (railheads, ammunition establishments, and airdromes). The antiaircraft intelligence service gives prompt warning of the approach of hostile aircraft to all units concerned. (See par. 67.)

Antiaircraft artillery weapons are sited so they may be employed against attack by mechanized vehicles when this can be done without interference with their normal missions. In the event of simultaneous attack from hostile aircraft and mechanized vehicles, fire must be concentrated against the more dangerous threat.

ORGANIZATION OF THE GROUND

■ 634. The organization of a position is limited only by the time and facilities available. Protection is to be sought in the distribution of defenses in depth and in width, their adaptation to the terrain, concealment from hostile observation, and in the strength of construction. From the beginning, great care is taken to conceal the most important works by *camouflage* or natural terrain features. Measures for increasing the effect of fire and for providing adequate signal communication take precedence over the construction of field fortification.

■ 635. Troops carry out the organization of the position in accordance with a *plan of construction* expressed in orders in the form of priorities. After the location of combat emplacements has been fixed, priority is given to clearing the field of fire, to removal of objects masking our own observation, and to the determination of ranges to points in the foreground. Primary consideration should be given to provisions for camouflaging the works to be constructed. These measures are followed ordinarily by the construction of the various defensive works and obstacles, and by the preparation of routes of approach for reserves and for ammunition supply. Work may proceed simultaneously on several items.

Artillery and heavy weapons units give priority to the construction of *observation and command posts* and *signal communication systems*, and provision for the supply of ammunition. Shelter is constructed for personnel and provision is made for camouflage of ammunition dumps and the protec-

tion of ammunition against the weather. For the protection of guns, more reliance is placed upon camouflage and provision for alternate positions than upon the fortification of gun emplacements.

■ 636. In the construction of *obstacles*, wire entanglements are sited so that their outer edges can be swept by flanking fire. Other obstacles are coordinated with demolitions. All obstacles are covered by fire to hinder their removal. They should be concealed from hostile observation.

■ 637. *Dummy works* serve to mislead the enemy and disperse his fire. To be effective, they must closely resemble genuine works; dummy works easily recognizable as such give the enemy valuable negative information. They must bear evidence of an attempt at camouflage.

■ 638. Channels of signal communication are increased and alternate channels provided. Units are connected by wire lines not only with the rear but also laterally; the importance of lateral lines consists not only in affording direct signal communication between adjacent units but also in making available numerous alternative channels of signal communication between advanced units and the rear. Alternate command posts are selected and organized.

■ 639. *Engineers* are employed to impede the advance of the enemy by the execution of demolitions and by the creation of a zone of obstacles, including mine fields. When necessary, they defend the demolitions and obstacles which they construct. They increase the defensive powers of the other arms by the construction of field works requiring special equipment or training, by technical assistance in other works of organization of the ground, and by furnishing them with the necessary tools and engineer supplies.

They may also be employed in the siting or preparation of rear positions. In emergencies they may participate in the defense as infantry.

■ 640. The activities of the *chemical troops* and engineers are closely coordinated. Persistent chemicals, if to be used, have especial defensive value by reason of the fact that concentrations established before the hostile attack retain their effectiveness during the course of the attack. Barriers of persistent chemicals are placed to protect portions of the

front and flanks of the position and to cover defiles, vital roads, road junctions, and wooded stream lines across or along favorable routes of hostile approach. When these barriers can be placed without hostile interference, persistent chemical mines are employed; when the area is controlled by the enemy, aviation, artillery, or chemical mortars are used. In deciding to use persistent chemicals, the commander must carefully evaluate its effect on his contemplated future operations.

■ 641. The selection of a *rear position* at such distance from the main position that the attacker cannot direct the fire of his artillery upon it, without displacing his batteries, facilitates the conduct of a flexible defense. The extent of its organization will depend upon the situation and the time available. The forces employed in the construction of the rear position must not be obtained at the risk of jeopardizing the defense of the main battle position.

■ 642. The development of a hastily occupied defensive position into a more strongly fortified defensive system is dependent upon the situation and the time and material available for construction. This may take place on a front which has stabilized after an indecisive battle, or is out of contact with the enemy.

■ 643. The development of such a defensive position aims first of all to strengthen the main line of resistance, battery positions, and the command and control facilities of the entire position. The means employed include numerous communication trenches; obstacles, including tank barriers and mines; shelter for troops; observation and command posts, including alternate locations; signal communication; gun positions; and supply dumps. These works differ from those in mobile situations in the elaborateness and permanency of their construction. In areas of resistance in rear of the main line of resistance, permanent works are constructed to limit hostile penetration. All works are concealed or camouflaged.

In the siting of emplacements for defending troops, extreme care must be taken that there are no undefended approaches from any direction that would permit hostile elements to work their way in close enough to destroy the occupants with hand grenades or other close-combat weap-

ons. Provision must be made for protecting the rear against attack by troops transported by air, and by highly mobile forces.

■ 644. *Communication trenches* greatly facilitate the exercise of command, the movement of troops, and the functioning of supply. In moving situations, time will rarely be available for the complete construction and camouflage of such trenches. They are indispensable in the prolonged occupation of a position. They are first constructed over exposed stretches on the routes of approach from the rear; their entrances are conspicuously marked. As a general rule, communication trenches should not be employed as combat emplacements. They should be so sited that they will not indicate to the enemy the location of combat emplacements. Their use, however, as part of a switch position in case the main line of resistance becomes untenable, should be considered.

■ 645. The nature of *overhead cover* varies with the location of the troops to be sheltered. The only forms of protection having permanent value against fire are dugouts and concrete or steel shelters sufficiently resistant to withstand high-powered artillery fire and bombs from the air. Deep dugouts in the front lines do not permit the prompt egress of troops, and in case of attack may become traps. Overhead cover for front-line troops is designed chiefly to afford splinter-proof protection and shelter from the weather. Lack of strength is compensated for, as far as possible, by the increased number and smaller size of the shelters.

■ 646. Overhead cover is an essential means of conserving the fighting capacity of the troops in the prolonged occupation of a position.

Reserves within range of hostile artillery fire and subject to the attack of combat aviation are, as far as practicable, sheltered in bombproof dugouts.

■ 647. In a stabilized situation, the problem of drainage assumes great importance; the siting of works with a view to effective *drainage* is always given due consideration.

■ 648. In addition to the depots of large units, small dumps of ammunition, rations, and materials needed in the construction and defense of the position are established in the sectors of small units.

■ 649. The *priority of work* in the development of a position which is out of contact with the enemy is determined largely by the time required for the construction of the essential works and the extent to which they lend themselves to camouflage. Provision must be made for camouflage before the work is begun. Camouflage is then carried on continuously throughout the work.

After reconnaissance and determination of the method of occupation of the position, command posts, observation posts, signal communication facilities, obstacles, and shelters for the troops are constructed. Adequate forces must be concentrated early on important works requiring a considerable period for their construction. To avoid disclosing the position, the construction of fire and communication trenches may be deferred until troops occupy the position.

SECTION II

CONDUCT OF THE DEFENSE

■ 650. The defense is conducted along *mobile* lines. Mobility is obtained by the use of covering forces, by improving facilities for movement within the battle position, by distribution of forces in depth, and by holding out reserves capable of rapid movement. Covering forces delay, deceive, and disorganize the enemy; units in organized areas of the battle position hold their positions at all costs; reserves maneuver behind the pivots thus established. Mobile and rigid defense are so combined that possession is retained of the areas essential to the maneuver of the defensive forces, the maximum forces are made available for counterattack or counter-offensive purposes, and the enemy is deceived as to the character of the resistance with which he is confronted.

■ 651. The conduct of the defense must be aggressive. It must be prepared to take advantage of errors or failures on the part of the enemy. The *counterattack* is the decisive element of defensive action. It is seldom feasible to hold a defensive position by passive resistance only.

■ 652. The integrity of the battle position is maintained by a combination of fighting in place and counterattack.

Regardless of the considerations which dictated the adoption of a defensive attitude, the *tactics of defensive combat* are essentially to develop the maximum firepower against an

advancing enemy, to reduce our own losses by a better knowledge and utilization of the terrain, and thereby to stop the enemy's advance or throw him back by counterattack.

■ 653. In order to maintain itself in action in the face of hostile superiority, the artillery must fully exploit its mobility. If there are indications that the location of certain batteries has been discovered, such batteries effect a change to one of their alternative or supplementary positions.

In quiet periods, artillery units assigned to counterbattery and harassing missions may be moved to previously surveyed positions for the delivery of fire. This movement, occupation of position, delivery of fire, and return to position are generally accomplished during hours of darkness.

■ 654. When the imminence of the hostile attack is discovered, *counterpreparation* fires are directed upon the hostile attack formations, artillery, and command, observation, and signal communication systems to break up the attack before it starts. A general counterpreparation involving all of the artillery with the command is fired on the order of the superior commander. Local counterpreparations designed to cover only the points threatened by a local attack are fired on the order of subordinate commanders.

■ 655. If the enemy succeeds in launching his attack in spite of the counterpreparation, the artillery seeks to keep him under fire in considerable depth by placing defensive concentrations on his advancing attack echelons and on his reserves, and by continuing counterbattery fire. These fires are delivered on the request of supported unit commanders, or of observers following the progress of the attack with air or ground observation.

■ 656. Finally, defensive concentrations and barrages are fired close to our troops. They strengthen the fire of other weapons covering the most dangerous avenues of approach to the positions. Barrages generally are delivered on pyrotechnic signal from the front-line troops, but may be executed on report from artillery observers that the hostile attack is threatening the integrity of the position.

Since a uniform distribution of artillery fire along the entire front is generally ineffective, plans for the delivery of concentrations and barrages are designed to provide fire on

critical areas or fronts. These fires, especially the barrages, are delivered at a high rate, and involve a great expenditure of ammunition. Hence, it is essential that front-line units carefully consider the emergency in their calls for artillery support.

Provision should be made for reinforcing counterpreparation and barrage fires by artillery normally assigned to other missions, or by the artillery of adjacent divisions.

■ 657. In addition to the artillery, *other supporting weapons* participate in counterpreparation and barrage fires. Their fires are coordinated with those of the artillery in the plan of defense.

■ 658. *Infantry* defends its position by employing all the weapons at its disposal in cooperation with artillery fires, supported by combat aviation, both pursuit and bombardment. As the enemy comes within range, the infantry heavy weapons, including those of units in reserve, are brought into action.

■ 659. A unit intrusted with the defense of a tactical locality *under no circumstances abandons it* unless authorized to do so by higher authority. Important localities on the main line of resistance must be defended to the last man. Local commanders take the necessary steps to maintain their positions, rectifying gaps in their dispositions or fires by the use of their supports. Plans are made for the employment of local reserves. As the area of their probable employment becomes apparent, reserves are moved to be more readily available for action.

■ 660. When the front and direction of the main hostile attack have been determined, the defense takes final steps to meet it. *Combat aviation* attacks those hostile elements which constitute the greatest threat to the defense. *Artillery* and other supporting weapons deliver fires on the attacking infantry. As the hostile attacking elements come within effective small-arms range, and are unmasked by the withdrawing outposts, the defending force increases its fire with all available weapons. Threatened sectors not fully garrisoned are occupied. *Chemical troops*, from positions well forward, supplement the fires of artillery and other supporting weapons with fires on avenues of approach and on known or probable areas occupied by the attacking troops. The bulk

of the available reserves are held mobile, prepared for aggressive action.

As the enemy attack draws closer, machine guns switch their fires to their final protective lines; all weapons participate in the fire fight, until finally the enemy is stopped or driven back.

■ 661. Reconnaissance is conducted and plans are prepared for the employment of *reserves*, based on the probable lines of action which may develop during combat. Reserves must be prepared to occupy a previously reconnoitered defensive area to check a hostile penetration or an envelopment of the position, or to deliver a counterattack for the purpose of maintaining or restoring the main defensive position. Reserves are committed to the position only to the extent necessary to stabilize the situation and establish a firm base from which to launch a counterattack. Motor transportation is used to increase the mobility of reserves.

■ 662. *Tanks* are essentially offensive weapons. They are held in reserve in a covered position out of effective artillery range until the situation is favorable for their employment. They constitute a powerful reserve in the hands of the commander either to engage hostile tanks or to support a general counterattack or counteroffensive.

■ 663. Should the enemy succeed in penetrating or outflanking the position, the defender seeks through *fire and maneuver* to eject the hostile elements which have so advanced. The fire of the supporting artillery is concentrated on the hostile elements which have entered the position. Local reserves, supported by all available weapons and protected by smoke from chemical mortars, *counterattack* against the flanks of the gap to thrust back the enemy before he has had time to establish himself. Such local counterattacks must be launched during the period of temporary confusion and disorganization which occurs when the attacking troops have entered the position and have not had time to reorganize and establish themselves. *This period is relatively short. Consequently, the counterattack must be delivered without delay, on the initiative of the local commander.* The object of such counterattack is to stabilize the situation on that particular part of the position and prevent widening of the gap, or, in case of a small penetration, to eject the enemy. Surprise,

boldness, and rapidity are the principal factors which lead to successful execution. Anticipatory planning to include reconnaissance will facilitate greatly the prompt delivery of the counterattack. If the enemy is given time to reorganize and to place his machine guns and antitank guns in position to defend the ground he has gained, the opportunity to counterattack by local reserves probably has passed. Then only a well-prepared counterattack by larger reserves strongly supported by combat aviation has much chance of success.

■ 664. Should the enemy succeed in penetrating through the position with a strong mechanized attack, it is essential that units on the battle position close the gap thus created without delay, and before succeeding hostile units can exploit the success attained. The shoulders of the salient must be held at all costs. Local commanders must react promptly and on their own initiative rectify the situation.

■ 665. If the enemy has attained such success that local commanders are unable to eject him, the higher commander must decide whether to *counterattack with reserves* at his disposal to restore the battle position, to continue battle on the battle position and prevent further enemy advance, or to withdraw to a prepared position in rear.

Time is required for the preparation of a major counterattack. Sufficient reserves must be assembled to carry the attack forward. Adequate fire support must be arranged. Assembly positions, zones of action, objectives, and time of attack are clearly specified. Surprise is an important factor. Employment of artillery, chemical troops, mechanized units, and combat aviation is regulated and controlled by the higher commander. Whenever practicable, the counterattack is launched against the flanks of the hostile salient. *Advance planning* for such an operation is essential in order to reduce to a minimum the time required in final preparation.

In reaching a decision to withdraw to a rearward position, the commander must carefully evaluate the time required to reach and organize such a position and the effect of hostile mechanized and air attacks on his withdrawing forces. The rapidity and power with which mechanized units and combat aviation can strike indicate the necessity for the organization and occupation of the rearward position prior to the withdrawal of the forces directly engaged with the enemy. Re-

serves of higher commanders are suitably employed on such rearward positions. To order a withdrawal to an unorganized and unoccupied rear position in the face of attacks by mechanized forces and combat aviation invites disaster for the entire command.

■ 666. When the battle is interrupted by nightfall, combat outposts are established by front-line battalions. (See par. 678.) Provision is made for patrolling and illuminating the foreground and the intervals between defense areas. Front-line garrisons may be reinforced. Machine guns are laid for their final protective fires. Provision is made to place the defensive fires of artillery and other supporting weapons in front of the combat outposts. These fires cover those areas that cannot be reached by rifle and machine-gun fire and should be prepared while there is still some daylight. They are delivered on prearranged signals from the combat outposts.

■ 667. When the enemy succeeds in establishing himself on favorable ground at close range from the main line of resistance, it may be advisable to redistribute the defending forces in depth. In such case the main line of resistance may be shifted to the rear of the zone of resistance, and the original main line of resistance held by combat outposts; or the defense may be transferred to a rear position, in which case the preparations for a withdrawal from action and a renewal of the defense on the new position must be made in advance. (See ch. 11.) Withdrawal to a rear position is as a rule advisable only when the situation clearly shows that the first position is untenable or will soon become untenable.

■ 668. When a stabilization of operations gradually develops, the decision must be made whether to push an outpost forward and continue to hold the present position, making the necessary rectifications; or to hold the old position as an outpost position and transfer the principal forces to a rear position (see par. 641), which then becomes the main battle position. In either case a redistribution of forces is necessary.

Measures are taken for the development and strengthening of the new defensive position. Obstacles are reinforced, additional mine fields are constructed, defense against chemicals is more thoroughly organized, shelter is provided for men and ammunition, and measures are taken to provide for the rest and comfort of troops.

■ 669. Where a stabilized situation develops or a defense continues for a prolonged period, the necessity for conservation of the fighting power of the troops requires provision for the periodic *relief of units* in line. For the sake of continuity in the execution of the plan of defense, it is as a general rule advantageous to avoid relieving the artillery and the infantry at the same time.

The relief is preceded by a detailed reconnaissance of the sector by officers of the relieving unit. If time permits, all commanders down to and including platoon leaders should visit the position prior to the relief. Commanders familiarize themselves not only with the disposition of the defending force, but with the known hostile dispositions on their part of the front. Arrangements are completed for the transfer of supplies and special equipment to be left on the position by the unit relieved. Sufficient guides are detailed from the unit to be relieved to meet each infantry platoon or similar element of the relieving force and conduct it to its position.

■ 670. *Secrecy* in planning and conduct of the relief is essential to its successful accomplishment. The relief should be carried out under cover of darkness, and in sufficient time to permit the bulk of the relieved force to be beyond artillery range prior to daylight. Careful planning and proper supervision will prevent congestion of incoming and outgoing troops at critical points.

■ 671. The execution of the relief takes place under the direction of the commander of the unit to be relieved; he remains responsible for the defense of the sector until the relief has been completed.

SECTION III

TERMINATION OF THE DEFENSE

■ 672. An attacking enemy, through his own maneuvers, losses, errors, exhaustion, or other cause, may be placed in such an unfavorable position that superiority passes to the defender. The latter then has a prospect of success in a *counteroffensive*, which aims at a tactical decision, the defeat and possible destruction of the opposing force. It is conducted as an offensive operation. (See ch. 9.)

■ 673. Should the situation change to one requiring a retrograde movement, the operation is conducted as indicated in chapter 11.

SECTION IV

SECURITY IN THE DEFENSE

■ 674. Prompt and continuing *security measures* are taken in those directions from which the enemy is capable of attacking. Measures for counterreconnaissance are taken by all troops and agencies in order to screen from the enemy the preparations and dispositions made for defense.

■ 675. The enemy will seek to avoid disclosing the distribution of his forces and the front of his main attack until his deployment is completed. The defense must gain contact with the enemy at the earliest opportunity and maintain such contact in order not to be taken by surprise. Every available means of reconnaissance is employed to locate the enemy and determine the direction of his advance and the distribution of his forces. Additional information relating to the outlines of the enemy's dispositions and the direction of his main attack are sought during the delaying action of the covering forces.

■ 676. If the outpost is at a considerable distance from the battle position, the foreground of the battle position is temporarily occupied by *combat outposts*, detailed from each battalion holding a sector of the main line of resistance.

■ 677. The *mission of the combat outposts* is to provide local security and gain time for troops responsible for the defense of the main line of resistance, and to deceive the enemy regarding where the main resistance is to be encountered. As long as the main outpost position is held, combat outposts of battalions on the main line of resistance may be relatively weak. The approximate strength of combat outposts may be directed by the higher commander. When there are no friendly troops in front of them, combat outposts maintain close contact with the enemy.

■ 678. As a rule a combat outpost is established by each front-line battalion or squadron in contact with the enemy. When battle is interrupted by nightfall, combat outposts push their patrols forward in close contact with the enemy. The action of the combat outposts in adjacent sectors is coordinated by adjacent and higher commanders.

SECTION V

ANTIMECHANIZED DEFENSE

■ 679. Defensive measures against mechanized units comprise special weapons, or the special use of existing weapons, natural and artificial obstacles, organization of the ground, and a warning system. (See ch. 6.) Antimechanized defense must be organized in depth.

■ 680. The antitank gun is of first importance in antimechanized defense. Employment of antitank guns is based on a minimum of guns in position initially to cover obstacles and as a first echelon of defense, and a maximum of guns as a mobile reserve. Based on information of hostile mechanized forces, reserve guns are moved rapidly to previously reconnoitered locations and so disposed in depth as to permit timely and powerful reinforcement of areas threatened by hostile mechanized attack.

Guns intended solely for antimechanized use are kept concealed until their special target appears; their effectiveness is jeopardized if their location is prematurely disclosed. Close-in protection of antitank guns must be provided by other troops.

■ 681. Weapons whose primary missions are against objectives other than mechanized units are used also against mechanized vehicles to the limit of their effectiveness. Small-arms and machine-gun fire has a limited effect, interfering primarily with the enemy's observation. High explosive and incendiary hand grenades are effective against certain types of armored vehicles.

■ 682. In the use of all direct laying weapons, fire against mechanized vehicles is withheld until they have come within effective range.

■ 683. All supporting *artillery* must be prepared to assist in antimechanized defense. In both offensive and defensive action provision should be made for the rapid concentration of as much artillery fire as possible on all areas favoring the assembly and maneuver of mechanized units, particularly on any defiles leading to such areas. Antitank weapons furnish the main defense against armored vehicles. However, when a strong hostile mechanized attack is imminent, light artillery

may be moved to positions from which to counter the hostile mechanized vehicles by direct laying.

■ 684. *Antiaircraft artillery weapons* are suitable for use against mechanized vehicles. Every effort is made to assist in antimechanized security by siting antiaircraft artillery weapons so that they may be employed against mechanized attack. In the event of simultaneous attack by hostile aircraft and mechanized forces, fire must be concentrated against the most dangerous threat. For maximum effect against mechanized vehicles, special armor-piercing ammunition must be provided.

■ 685. *Large tank units and armored divisions* are effective means to counter hostile mechanized and armored forces. They must be used offensively in large groups on definite counterattack missions, usually for maneuver to deliver a surprise blow against the flanks and rear of the hostile mechanized force. Their employment must be closely coordinated with and supported by ground forces, antimechanized means, and combat aviation.

■ 686. *Combat aviation* is a powerful weapon against mechanized forces. Bombing, chemical, and direct fire attacks will be effective under many conditions. It has the mobility and fire power to strike and break up mechanized threats before they arrive within range of artillery and antitank guns.

■ 687. *Chemical agents* may be used to restrict possible assembly areas for armored units, to cause casualties to units in movement, and to render difficult the removal of obstructions or repair of demolitions. Ordinarily persistent chemicals will be most effective, unless their use will interfere with subsequent operation of friendly troops. Under such circumstances the use of lung irritants, tear, sneeze, or vomiting gas may be advantageous.

Improvised combustibles and explosives thrown by individuals against the most vulnerable portions of enemy armored vehicles are valuable means of supplementing close-in anti-mechanized defense.

■ 688. *Mines* are an effective means of defense against mechanized forces. They can be laid or buried without prohibitive expenditure of time and labor. They usually are laid in irregular checkerboard order, in three or more rows, avoiding

any strictly geometrical pattern. Mine fields are installed within the defended area as well as in front of it.

Mines are useful for quickly blocking defiles and favorable avenues of hostile approach. The location of mines must be coordinated with natural or artificial obstacles and with the fire of antitank guns and other weapons. They should be concealed, supplemented by dummy mine fields, and covered by fire to prevent removal by the enemy.

Mine fields, contaminated areas, and obstacles restrict the movement of the troops which they are designed to protect. A record must be maintained of the location and extent of such obstacles so that the necessary precautions may be prescribed for the safety of troops.

■ 689. *Natural obstacles* to mechanized attack include buildings and walls, water courses, lakes, marshes, mountainous country, stumps, rocky ground, and thick woods. Few areas can be classed as tankproof. Undue reliance on natural obstacles must be guarded against. Guided by these considerations, the defensive possibilities of terrain must be studied constantly from the viewpoint of antimechanized defense in order to utilize existing natural obstacles to the maximum.

■ 690. *Artificial obstacles* consist principally of mine fields, antitank ditches, post obstacles, barricades, and demolitions. (For details, see FM 5-30.) The location of artificial obstacles must be coordinated with natural obstacles and with the fire of antitank and other weapons. The main effort in the construction of artificial obstacles is made on those parts of the front possessing natural obstacles which are susceptible of improvement; the bulk of the antitank guns are placed to cover the avenues favorable for tank action. It is important that obstacles be covered by fire to prevent hostile crews from removing the obstructions. Obstacles located well to the front or flanks at critical points where the fire of antitank guns or artillery is impracticable may serve to canalize, halt, or delay mechanized units, thereby providing favorable targets for combat aviation. Removal of obstacles can be impeded by contamination with persistent chemical agents. In general, obstacles, demolitions, mines, and persistent chemical contaminations are located where the enemy will come upon them suddenly and be unable to avoid them.

If the hostile mechanized attack succeeds in entering or breaking through the battle position, it must be stopped, thrown back, or destroyed, either by antitank units, by mechanized counterattack, or by both means. Effort is made to break the hostile forces into small groups which can be destroyed more easily.

■ 691. It may be impracticable or inadvisable to direct the main effort of the counterattack against the enemy's mechanized force. A mechanized attack once launched and initially successful proceeds with such rapidity that an attempt to direct countermeasures against the mechanized vehicles may result in a direct pursuit rather than an attack. A counterattack against the base or flank of a salient may often be more effective than one against its point.

■ 692. A counterattack directed at the rear of a mechanized attack will usually meet other mobile supporting troops rather than mechanized units.

Such a counterattack employs all available arms, including the mechanized forces of the defender. It has the characteristics of a mechanized attack, that is, it leads with mechanized units and exploits with motorized, horse, and foot troops. It seeks to close the gap created by the hostile mechanized force and to isolate and eventually destroy the enemy's advanced elements, including his mechanized forces. However deeply these last may penetrate and however great the damage they may do, once their supply lines are cut they will be immobilized and, in the end, destroyed.

■ 693. All available *fire support* is used in the counterattack. If the counterattack is directed against the enemy's mechanized force, this fire support should be strong in antitank cannon.

■ 694. *Supporting combat aviation* is used at the crisis of the action to the limit of its availability. It may be directed against enemy front-line units in direct support of ground units engaged in counterattack, or to cause confusion in rear areas, interfere with maneuver, and disrupt routes of communication. It is employed on missions which further the attainment of the objective of the supported forces. It is not used on missions divergent from this purpose.

■ 695. The counterattack is conducted by units initially in reserve. The introduction of enemy mechanized forces into the situation affects the composition, location, and equipment of these reserves. They should be highly mobile and strong in mechanized and motorized elements and antitank weapons. They should be located to permit timely and rapid movement toward any point where an enemy mechanized attack may be expected.

CHAPTER 11

RETROGRADE MOVEMENTS

GENERAL

■ 696. A retrograde movement is any movement of a command to the rear, or away from the enemy. It may be forced by the enemy or may be made voluntarily. It may be classified as a withdrawal from action, a delaying action, or a retirement.

■ 697. Retrograde movements are made to accomplish one or more of the following purposes:

- a. To disengage from battle.
- b. To avoid battle in a disadvantageous situation.
- c. To draw the enemy into a situation unfavorable to him.
- d. To gain time without fighting a decisive engagement.
- e. To conform to the movement of other troops.
- f. To permit the employment of a portion of the command elsewhere.

■ 698. Retrograde movements in the face of the enemy are difficult maneuvers and require constant control and supervision by all leaders. Mechanized forces and combat aviation have increased the difficulties in executing these maneuvers and the necessity of organizing and occupying rear positions prior to the retrograde movement. (See par. 665.) Prompt reorganization of units, careful attention to the feeding and care of the men, and the presence of higher commanders well forward, will tend to counteract the detrimental effects of this type of action.

■ 699. *Demolitions, obstructions, and contaminations* are used to the maximum in all retrograde movements in order to delay hostile pursuit, to assist in flank protection, and to destroy materials and resources that may have to be abandoned. Plans for this work must be prepared well in advance.

■ 700. *Combat aviation* is employed against hostile observation aviation and to delay the hostile follow-up or pursuit by harassing and interdicting hostile forces at critical local-

ities. Its action must be coordinated with that of flank and rear guards.

■ 701. In retrograde movements, maximum advantage must be taken of available motor transportation to expedite the rapid movement to the rear of units which have withdrawn from action. Security forces should consist of highly mobile units.

■ 702. A hostile force, strong in mechanized and motorized units and combat aviation, may be expected to follow up or to pursue any retrograde movement relentlessly both by day and by night. (See also par. 665.) This necessitates continuous ground and aerial reconnaissance to both flanks and rear, rapid movement under cover of darkness, strong anti-aircraft defense, and continuous all-around antimechanized defense particularly on exposed flanks. Close support by combat aviation is essential. Mobile reserves, particularly mechanized and antitank units, are held out in order to counteract wide and rapid movements to our flanks and rear, or penetration through our front, and to counter any attacks by troops transported by air.

WITHDRAWAL FROM ACTION

■ 703. A *withdrawal* from action is the operation of breaking off combat with a hostile force. The general purpose of the operation is to regain or preserve freedom of action.

■ 704. A *daylight withdrawal* usually involves such heavy losses and so great a degree of disorganization that it is preferable for large units to hold out at all costs until nightfall and effect the withdrawal under the cover of darkness. As a rule, only rearward echelons can be withdrawn successfully by day. Small mobile forces may execute daylight withdrawals.

■ 705. The heavier the previous fighting and the closer the engagement with the enemy, the more difficult will be the withdrawal.

■ 706. A withdrawal is facilitated by concealment of dispositions and movements, by bad weather, by rapidity of movement, by the careful preparation of plans, and by counterattacks.

Successful counterattacks often create conditions most

favorable to the withdrawal. Because of their mobility and fire power, combat aviation and mechanized units are especially suited to support counterattacks.

■ 707. The commander who orders a withdrawal designates a *rearward position* on which the troops will prepare for a renewal of resistance or under the protection of which the troops may be assembled for further retrograde movement. The rearward position is selected at such distance that the enemy will be compelled to regroup his forces, displace his artillery, and renew his preparations for attack. The commander usually determines the location of the position from the map. He then issues the necessary orders for reconnaissance of the position and routes thereto.

The commander makes special provision for holding the road centers that control the lines of communication to the rear, and the features of the terrain that afford extended observation over the areas in rear of the battle front.

■ 708. In a daylight withdrawal, in addition to the rearward position, the commander selects a suitable covering position and details, from any available reserves, a mobile *covering force* strong in fire power to occupy it and *cover the withdrawal of the troops engaged*. Artillery, engineers, antiaircraft automatic weapons, antitank weapons, and chemical troops are attached to the covering force.

■ 709. The mission of the covering force is to stop, restrict, or divert the advance of the enemy in order to permit the main body of our troops to disengage, assemble, and move to the rear. The successful accomplishment of this mission depends largely on the composition and location of the covering force and on the efficient execution of a systematic plan of artillery and machine-gun defensive fires. Often the mission can be best accomplished by counterattack.

■ 710. The *position* of the *covering force* in a daylight withdrawal is selected so that it will cover the routes of withdrawal and the assembly position of the main body. Under certain conditions, the occupation of a flank position may be advisable in order to force the enemy to execute a time consuming maneuver.

When its mission is accomplished, the covering force withdraws to the rearward position.

■ 711. In his order for the withdrawal the commander indicates the rear position, assigns zones or routes of withdrawal to the units of the command, prescribes the strength and conduct of the covering forces, fixes the hour and the priority of withdrawal of units, orders the establishment of essential signal communication, and takes the necessary steps to clear the routes for the movement of troops. Prompt starting of trains to the new areas, evacuation of the wounded, removal or destruction of supplies, energetic measures for the maintenance of traffic control, construction of necessary bridges, and preparations for the execution of demolitions on the routes of withdrawal are of importance. Adequate measures are taken to insure secrecy and for antiaircraft and antimechanized defense. Measures are instituted to regulate or silence radio communication.

The new command post is designated early and preparations are made for establishing a landing field nearby. (See FM 101-5.)

■ 712. It is best usually to withdraw the least heavily engaged units first. When the terrain is favorable and the security of the command permits it, all subordinate units may be withdrawn simultaneously. However, it usually is necessary to move certain units ahead of others in order to avoid congestion and to insure a smooth execution of the movement. This procedure also gives greater security to the command because the units remaining temporarily in place cover the withdrawal of those first to move. In some situations, counterattack may make it possible to withdraw first those units which are hardest pressed, or which are exposed to the most dangerous threats. However, when necessary to protect the command as a whole, these hard-pressed units must stay to the last. It is better to run the risk of losing certain units than to jeopardize the whole command.

■ 713. The zone of action for the withdrawal should provide the best and most direct routes to the rear position. The movement of subordinate units is coordinated by assigning to them zones of action or definite routes. Generally, zones of action are assigned to the main combat units, especially if they may have to fight while moving back. Routes generally are assigned to trains and to those units which move to the rear under control of the higher command; such units may

include artillery, tanks, and reserves. The zones of action or routes so assigned should usually extend to the rear position. If the rear position is distant, the zones or routes should be indicated back to a distance of 1 day's march.

■ 714. At *night* the *withdrawal* of the greater part of the forces engaged commences shortly after nightfall. Small detachments are left in immediate contact with the enemy. These detachments, formed from troops nearest the enemy, should be well-supplied with automatic weapons, ammunition, and pyrotechnics. In view of the broad front upon which they are deployed, a single covering force commander ordinarily cannot maintain effective control. The superior commander, therefore, provides artillery support, coordinates the action of the elements holding the various sectors, indicates the time of their withdrawal, and prescribes their action in case of hostile attack. They may be directed to withdraw either at a prescribed hour or upon order.

■ 715. The detachments left in contact with the enemy at night, screen the withdrawal by simulating normal activity. By firing from different positions, reconnaissance of combat patrols, and sending up pyrotechnics, they endeavor to create the impression of normally held lines.

Whenever practicable, the foot elements of these detachments should be furnished motor transportation for movement to the rear. Motor transportation is especially desirable when the distance of the retrograde movement is great.

■ 716. Whether the rearward position is organized for defense or is the area in which the command will be assembled for further retrograde movement, the commander makes provision for a covering force in front of this position. The mission of this covering force is to cover the withdrawal of the detachments left in close contact with the enemy and of the artillery supporting these detachments. It has the further mission of protecting the assembly of the main body for further retrograde movement or to serve as an initial outpost if the rearward position is to be defended.

■ 717. At night the withdrawal of front line units is executed on a *broad front*. Troops withdraw initially straight to the rear and then move to designated assembly areas where small units are reformed and preparations are made for further rearward movement and assembly into larger units.

■ 718. At night a part of the artillery remains in position to support the elements still in contact. It increases its fire activity to deceive the enemy as to the amount of artillery in action and assists the troops in contact in breaking off combat. Well supplied with ammunition and protected for all-around defense, this artillery sacrifices itself if necessary to insure the withdrawal of the supported elements. The remainder of the artillery is withdrawn to the rearward position, priority in movement being given to the heavier calibers.

■ 719. During withdrawals *antiaircraft artillery* furnishes protection for the assembly areas, the heads of columns, and, particularly, critical localities along the routes of withdrawal.

■ 720. *Cavalry* protects withdrawing troops by reconnaissance, protection of the flanks and delaying action.

■ 721. Continuous reconnaissance is made to facilitate the employment of antitank units to protect withdrawing troops against mechanized attack.

■ 722. *Tanks* are useful in daylight withdrawals, particularly in counterattacks, to assist other ground units in breaking contact with the enemy. When practicable, their action is coordinated with that of *combat aviation*. They are not ordinarily used in night withdrawals.

■ 723. Persistent chemicals may be used to deny or make costly the use of probable approaches. Smoke may be useful in covering the daylight withdrawal of a unit over terrain exposed to enemy fire.

■ 724. In addition to their primary mission of effecting road blocks and demolitions, *engineers* reconnoiter, repair, and mark roads. In certain situations, they reconnoiter and stake out rear positions and furnish guides. They assist the rearward movement of artillery, mechanized, and other units; destroy materials to be abandoned; act as part of a covering force; and constitute an emergency reserve.

RETIREMENT

■ 725. A *retirement* is a retrograde movement in which a force seeks to regain freedom of action, the movement being part of a well-defined plan which has for its purpose the refusal of decisive combat under the existing situation. A retirement may be made in one stage or in several stages,

depending upon the distance involved. When a withdrawal from action precedes the retirement, the actual retirement begins when march columns are formed.

■ 726. Without competent orders to do so a *decision to retire* is justified only when all possibilities of accomplishing the assigned mission have been exhausted and a continuation of the battle will lead either to excessive losses or to a decisive defeat.

No commander is authorized to order a retirement on his own initiative simply because of local misfortune or reverses suffered by an adjacent unit.

■ 727. In retirements following a withdrawal, the most important considerations for a commander are to place *distance*, *obstacles*, and a *rear guard* between his main body and the enemy and to regain his freedom of action.

Trains are put in march without delay, if necessary under escort, and sent to the rear to a selected bivouac area. During their retirement they establish dumps of ammunition, rations, fuel, and other supplies en route to meet the needs of the retiring troops.

Antiaircraft protection of important defiles on the route of retirement is established.

As fast as troop units arrive in assembly areas, they are formed into small columns and set in motion to the rear.

■ 728. *Road march formations* usually are taken up when the zone of effective hostile light artillery fire is passed. Formations are modified to meet existing conditions of terrain, visibility, intensity of enemy fire, activity of enemy combat aviation, and tactical requirements for control and rapidity of movement.

■ 729. During the initial phase of retirement made from contact, the division generally assigns specific *routes* to the trains, the artillery, and other auxiliary troops, and indicates when the routes will be cleared for the other troops. A *zone of action* usually is assigned to each combat unit comparable to an infantry regiment in size.

■ 730. As the distance from the enemy increases, small columns are consolidated into larger columns constituted as combat teams. During the march to the rear, constant effort is made to increase the distance from the enemy. This will

necessitate *night and forced marches* as well as effective security measures to protect the rear and the flanks and to delay the enemy.

■ 731. The actual terrain *objective* toward which a retirement is directed, depends upon the mission of the command and the purpose of the movement. It should be such as to favor the future action of the command. Factors which influence the selection of this objective are the actual and potential strength of the enemy; reinforcements that may become available; the time when the enemy can arrive at critical localities on the route of the retirement; and the extent that terrain and the weather favor hostile movement and interfere with friendly movements.

■ 732. The *formation and number of columns* to be employed during retirement depend principally upon the number of roads available and the hostile interference. It generally is desirable to move the major fractions of a deployed force to the rear simultaneously and abreast of each other. However, a hostile threat to a flank may make it necessary for one fraction to hold in position until the movement of the others is well under way. A restricted road net, or defiles in the zone of movement, may necessitate withdrawals of fractions successively. If a flank is threatened during the retirement, the adoption of an echeloned formation may be appropriate.

■ 733. The retirement order of a small command usually designates the time when each subordinate unit commences its movement. In commands the size of a division or larger, the commander usually designates the time that major portions of the command pass initial points or lines and, when appropriate, the hour that certain lines or assembly areas must be cleared. (See FM 101-5.)

■ 734. Clearing the *routes of march* and organizing an effective *zone of obstacles* to delay the enemy's pursuing columns are of greatest importance.

Engineers are sent back early to reconnoiter and improve the routes of retirement, repair bridges, and prepare obstacles and demolitions to be executed by the rear guard. Pertinent information of the location of obstacles and of the nature of the demolitions and contaminations prepared is furnished to the retiring troops. Measures are taken to prevent their en-

dangering our own troops and to insure their execution at the proper time. Chemical troops with chemical mines may be attached to the engineers for the contamination of obstacles and demolitions.

■ 735. *Traffic* is regulated at critical points to prevent congestion, especially in towns, at bridges, and at other defiles. Strong antiaircraft and antitank protection is established at these critical localities until they are cleared by the main body.

■ 736. Security detachments are provided with sufficient *artillery* to support them in the execution of their missions. The remainder of the artillery is so disposed in the retiring columns as best to protect the main body or support the security detachments.

■ 737. The *antiaircraft artillery* is disposed to protect the most vital points on the routes of the retiring columns. As the retirement progresses, the antiaircraft artillery moves rapidly by bounds from area to area, and frequently is given priority on the roads.

■ 738. During a retirement, *cavalry* is employed on security missions, and frequently may constitute or be attached to the rear or flank guards. Reconnaissance, particularly to obtain information of any hostile movement directed toward the flanks, is important and is assigned to the cavalry or to the security detachment controlling the cavalry.

■ 739. *Observation aviation* must keep under observation any hostile forces that are in position to interfere with the retirement, especially on the flanks. It should maintain close liaison with the security detachments. Airplanes usually are placed at the disposal of the artillery with rear guards to observe their long-range fires.

Combat aviation is employed to delay the hostile pursuit. Its action is coordinated with that of the security detachments.

■ 740. *Engineers* accompany or precede the main columns to facilitate their movement. Suitable detachments are attached to rear and flank guards to assist in delaying the enemy. Some engineers may be employed in certain situations to reconnoiter and stake out rear defensive positions.

■ 741. A retirement generally offers opportunities for the use of *chemicals* of all kinds. Smoke may assist security detachments in concealing their movements during successive withdrawals.

■ 742. In retirement orders, present command posts and the next ones to be occupied should be specified. Axes of *signal communication* should be indicated as far to the rear as it is practicable to foresee them.

SECURITY DURING RETIREMENT

■ 743. *All-around security* must be provided. In a short retirement which can be completed in one night, the covering force for the withdrawal usually gives sufficient protection for the movement. (See par. 716.) If the movement continues after daylight, a rear guard normally should be formed to protect the march of the main bodies. Initially this rear guard consists of the troops which covered the assembly of the main body reinforced by contingents of other arms as required by the situation.

■ 744. The *mission of the rear guard* is to protect the main body from surprise, harassment, and attack. By the successful execution of this mission a rear guard covering a retirement enables the main body to avoid accepting battle, and regains for the commander of the force his freedom of action. The strength and composition of a rear guard are such as to permit the execution of its mission without the intervention of the main body. When necessary for the security of the main body, the rear guard sacrifices itself in the execution of its mission.

■ 745. A *rear guard* covering the retirement of a combined force consists principally of infantry strong in automatic weapons, supported by artillery. Units of other arms are added in accordance with the requirements of the situation. Antitank weapons, mechanized units, signal troops, chemical troops, and engineers may be included.

The ability of cavalry to conduct delaying action makes it an important element of a rear guard. When the main body has succeeded in gaining sufficient distance from the enemy, cavalry may constitute the principal element of the rear guard.

■ 746. The *formation* and the *method of operation* of the rear guard are adapted to the situation. Movement to the rear is made by bounds, based on the progress of the main body and the time limit set by the higher commander for holding designated terrain lines. The distance between the rear guard and the main body is determined accordingly. Delays in the retirement of the main body must be expected.

■ 747. When in contact with the enemy, the rear guard distributes its forces in groups over a wide front and opens long range fire with its artillery and other supporting weapons to force the enemy to deploy and thus to delay his advance. Unless the security of the main body requires a stubborn resistance, the rear guard, as far as practicable, avoids close range combat and withdraws successively from position to position as the enemy approaches.

The successive positions of the rear guard are chosen at such distance from each other that the enemy is forced to renew his preparations for attack in front of each of them and that changes of position by the artillery of the rear guard are reduced to a minimum. A rear guard position should favor withdrawal by affording covered routes.

■ 748. When the enemy presses his pursuit closely, greater resistance is offered. Advantage is taken of favorable opportunities to punish overhasty pursuit by counterattack. Attack against the flanks of pursuing columns by mechanized troops or cavalry is an effective means of disorganizing the pursuit. The most favorable time for offering a determined resistance is during the late hours of the day to permit withdrawal of the rear guard under cover of darkness.

■ 749. When the distance from the enemy permits, the rear guard retires in march formation. Its *distribution* corresponds, in general, to that of an advance guard, and in reverse order of march, comprising the reserve, the support, and the rear guard cavalry or motorized detachment. The support provides a rear party and necessary flank patrols.

Because of the direction of march, infantry reconnaissance during the retirement is much more restricted than in case of an advance guard. Chief reliance for the execution of the necessary reconnaissances must be placed upon cavalry, mechanized units, and observation aviation. Mobile troops especially observe and forestall attempts to pass the flanks of the rear guard.

■ 750. When there is likelihood of attack by mobile troops against the heads of the retreating columns, *advance guards* are detailed. They are composed of mobile troops reinforced by antitank and engineer detachments. If there is no threat against the heads of the columns, the principal missions of the advance guard will be to clear routes of march, insure the uninterrupted movement of the main body, and regulate civilian and refugee traffic. For the latter purpose, military police are attached.

■ 751. Flank security is of especial importance during a retirement. When there is danger of an encircling maneuver in pursuit, *flank guards* composed of mobile troops with engineer, antitank, and chemical units attached, are detailed to cover the exposed flank. When opposed by an enemy strong in mechanized and air forces special attention must be paid to the security of the routes of retirement and the area or position to which the troops are retiring. Under such conditions it will normally be necessary to employ forces other than those retiring to occupy and organize the rear position before it is reached by the retiring forces. When conditions permit, the rear position is organized behind strong natural obstacles.

DELAYING ACTION

■ 752. Recourse to *delaying action* ordinarily implies either lack of readiness for battle or hostile superiority of force. Its purpose is to gain time while avoiding decisive action.

Delaying action may be used in the opening phases of battle to gain time for the unified employment of the entire command. It may also be called for in later phases pending completion of preparations for counteroffensive action. *It finds especial application in the operations of covering forces and other security detachments.*

In offensive operations delaying action by a portion of the command to delay the arrival of hostile reinforcements may be of decisive importance.

■ 753. Delay of an advancing enemy may be accomplished by offensive action, by defensive action in one position, by delaying action in successive positions, or by any combination of these methods.

■ 754. Skillful use of *terrain* has a decided influence on all delaying operations. A series of parallel ridges across the lines of hostile advance; unfordable streams, swamps, lakes, and other obstacles on the front and flanks; high ground with good observation and good fields of fire at long range; concealed routes of withdrawal immediately behind delaying positions; and a good road net all favor the execution of delaying action.

■ 755. In situations where the enemy has freedom of maneuver and mobile troops and the flanks of a delaying force are open to hostile attack, the *protection of the flanks and rear* is of vital importance. Since the enemy may succeed in pushing by the flanks or in executing a wider maneuver with mobile forces to strike in rear of an occupied delaying position, the commander must make provision to block or destroy such forces.

Ground and aerial reconnaissance forces must be continuously on the alert to locate such threats to flanks and rear.

■ 756. *Delaying action in successive positions* is based on limited resistance on a position, with the intention of renewing this resistance in successive positions if necessary. The defense on each position must force the enemy to early deployment and to time-consuming preparations for battle. Combat ordinarily is broken off in each position before troops become closely engaged. The situation may, however, require a strong resistance on some position or even a counterattack in order to accomplish the delaying mission.

The delaying measures are continued between positions in order to gain time for organizing resistance on the next position. Because of the retrograde and long range nature of such combat, delaying action is executed most effectively by troops possessing a high degree of mobility and great fire power, especially at longer ranges.

In general, contact is made as far forward as possible and continuous light resistance is offered in order to compel the enemy to employ his whole force and to consume a maximum of time. *No more ground than necessary* is given up. The ability to execute planned withdrawals under conditions that permit orderly movement to the rear must, however, be retained.

■ 757. In open terrain, the important consideration in the *selection of a delaying position* is a good field of fire at long range. Field of fire at close range is of less importance. In close and wooded terrain, observation and field of fire are equally unfavorable for both sides; the defender can, however, make full use of the cover, concealment, and obstacles offered by the terrain, whereas the attacker is restricted in movement and is unable to exploit fully his superiority of means.

The ground in rear of the position should favor a covered withdrawal by screening the troops from hostile view and fire as soon as the position is vacated.

Field fortifications are reduced to the minimum; full use is made of obstacles, demolitions, and chemical interdictions in front and on the flanks of the position and in the areas between successive positions.

■ 758. The *conduct of delaying action* is facilitated in open terrain by selecting successive positions on high ground at such distance apart that the enemy will be forced to displace his artillery in order to attack the next position in rear. In wooded terrain the infantry bears the brunt of combat, and successive positions may be much closer together.

In each position, the main line of resistance should insure facilities for artillery observation and for the delivery of effective long range fire by other supporting weapons. In general, the depth of the zone of resistance is not great. The artillery and the other supporting weapons are located close to the line of resistance.

■ 759. When the enemy has superiority in combat aviation, or mechanized forces, or both, the commander must ordinarily delay on a position until nightfall and then withdraw under cover of darkness to the rear position. Considerable distance between positions enables the commander to utilize fully the hours of darkness for withdrawal. In such situations, selection of positions strongly protected by natural obstacles which facilitate defense on a broad front becomes a primary consideration.

■ 760. In order to coordinate the operations, the combat zone is subdivided into sectors the boundaries of which are extended to the rear to include initially the first two delaying positions, and later the final position in the commander's plan of action. In favorable terrain the width of sectors in delay-

ing action may be taken as about double those suitable for defense.

A tactical unit is assigned to each sector and is given a combat mission. The strength and composition of each unit is determined by the assigned mission, the terrain, the width of the sector, and the nature of the hostile threat. Mutual support between adjacent units is coordinated by the next higher commander.

Decentralization of operations to combat team commanders will be frequent when operating on a broad front. Continuous liaison between adjacent combat teams, and between combat teams and the higher commander, must be maintained.

■ 761. The defense is conducted in each sector by small units holding the natural strong points of the terrain and supporting each other by flanking fire. In close terrain or during periods of low visibility, close contact between adjacent units is maintained by combat patrols. Local reserves protect the flanks of front line defense areas and cover the withdrawal of forward elements.

■ 762. *Artillery* in general support prepares a plan of interdiction fires covering principal hostile avenues of approach and is prepared to engage distant targets. It is employed to reinforce the artillery in direct support in accordance with the requirements of the situation. Special attention will be given to interdiction of hostile movements toward the flanks and rear.

Light artillery will often be attached to the unit it supports.

■ 763. *Engineers* are employed to construct a barrier zone of obstacles and demolitions in front of the first delaying position and in the area between successive positions. Anti-tank units are attached to units covering the hostile avenues of approach. To protect an exposed flank, a mobile flank guard is detailed with engineers and antitank units attached.

■ 764. Chemical troops may be employed to place barriers of persistent chemicals on the front and flanks of each position.

■ 765. The *antiaircraft artillery* is employed primarily to protect the artillery, reserves, and critical defiles in rear from hostile air attack.

■ 766. A mobile *reserve*, reinforced by tanks, artillery, anti-tank units, engineers, and chemical troops is prepared to move rapidly to counter mobile threats.

■ 767. As in the defense of any position, an *outpost*, strong in automatic weapons, is deployed well in front of the delaying position to harass and delay the enemy's advance and to keep him in doubt as to its location. Artillery support for the outpost will be provided by units supporting the delaying position.

■ 768. The greatest importance attaches to keeping the enemy in doubt as long as possible concerning the location of the successive delaying positions and the delaying nature of the operations being conducted.

■ 769. In fighting a delaying action, some troops are disposed on the rear position to cover the *withdrawal* from the positions in front.

■ 770. Timely measures are taken for reconnaissance and for preparation necessary for the occupation of the successive delaying positions in rear.

Provision is made for the establishment of *wire communication* from the higher commander to the sector commanders and to the senior artillery commander. Of especial importance is efficient operation of the artillery wire net in order that the flexibility of artillery fire may be exploited to the maximum. Signal communication to distant or detached units is ordinarily limited to radio and messengers.

The wire systems of subordinate units are limited to essential lines. Full use is made of prearranged visual signals and of mounted and motorcycle messengers.

■ 771. The commander *controls* the operation by prescribing the time of withdrawal and the time by which each successive position is to be occupied. In open terrain, it is often better to make a timely and simultaneous withdrawal from each position. In close terrain or when a command is deployed over a wide front this may be impracticable, and the decision regarding the time of withdrawal is then left to subordinate commanders. The commander exercises control by prescribing a general terrain line to which units eventually will withdraw or in front of which the enemy will be held until a designated hour.

■ 772. Whenever practicable, *withdrawal from a position* is effected under cover of darkness. If protracted resistance is necessary to accomplish this, measures are taken to extend the depth of the zone of resistance and to utilize to the maximum natural obstacles.

■ 773. If the withdrawal must be made in daylight, artillery and other supporting weapons are disposed in depth. *Combat aviation* and *tanks* are employed against those hostile elements which most seriously threaten the success of the operation. A daylight withdrawal may also be facilitated by organizing an *intermediate delaying* (covering) position to be occupied by reserves assigned to cover the withdrawal of troops in front (see par. 708). Subsequent withdrawal of the troops from the intermediate delaying position is in turn covered by other troops on the next delaying position in rear. Retirement may thus be executed by the alternate withdrawal of successive echelons from one delaying position to the next.

The loss of a defended tactical locality to the enemy does not necessarily involve an early withdrawal along the whole front. Adjacent units should take advantage of such situations to punish an impetuous enemy by heavy flanking fire and by local counterattacks whenever conditions are favorable.

CHAPTER 12

SPECIAL OPERATIONS

SECTION I

ATTACK OF A FORTIFIED LOCALITY

GENERAL

■ 774. A fortified locality may comprise a single, strongly organized position. It may consist of a series of strongly organized positions disposed in great depth and breadth in such manner as to be mutually supporting. In either case, its main battle position will be composed of camouflaged, mutually supporting, concrete and steel fortifications which may or may not be connected by underground passages and protected by obstacles.

The main battle position will be outposted by a system of concrete and steel artillery, automatic-weapon and troop emplacements, tank traps, and obstacles disposed in great depth to the front and flanks. The reduction of such a locality by direct attack may be costly in men, ammunition, and matériel. Such an attack offers little prospect of success unless the attacker has accomplished a high degree of technical training and has a great superiority, especially in tanks, engineers with special equipment, artillery, and combat aviation.

Whenever possible, fortified localities are reduced by siege or by an attack from the rear following an enveloping maneuver to accomplish their complete isolation. When because of secure flanks their isolation is impossible by an initial enveloping maneuver, they must be reduced by direct attack to break through at a weak point. The break-through is followed by envelopment of the flanks created, to isolate the separate parts.

■ 775. The attack of a fortified locality may be divided generally into four phases. In application, related phases may overlap, particularly on weaker parts of the front. Immediate exploitation of the success of each phase is imperative.

These phases are:

a. Reducing the hostile outpost system and gaining close contact with the main position.

b. Breaking through the fortifications at the most favorable point.

c. Extending the gap by isolating and reducing hostile emplacements on its flanks.

d. Completing the action by moving mobile reserves through the gap to complete the encirclement and isolation of remaining fortifications while continuing the attack against them from the front.

■ 776. The principal differences that distinguish a break-through of a fortified locality from the penetration (see pars. 468-472) of any other hostile position are the relatively greater special training and combat superiority required; the absolute secrecy and thoroughness of preparations; the types of special equipment and troops required; the frontage subjected to initial assault; and the action subsequent to the complete break-through and isolation of a fortified locality.

PREPARATION AND PRELIMINARY OPERATIONS

■ 777. Air supremacy is the first requirement for operations against a fortified locality.

■ 778. Reconnaissance determines the extent of the main position and its outpost system in depth and breadth; the location of dead angles and character of emplacements, artillery and antiaircraft artillery positions, tank traps and obstacles, and observation posts; those approaches which can be covered most effectively by the hostile defenses and those which afford the greatest advantage to the attacker and those areas in rear of the locality which favor action from the rear after a break-through has been effected. Reconnaissance involves the employment of observation and combat aviation, highly mobile ground reconnaissance units containing engineers, and sound and flash ranging and signal intelligence units. Air photographs are taken of the entire locality at successive intervals to determine the initial hostile defenses and the progress of any changes being effected therein. Important localities are outlined heavily and indicated clearly on the photographs; copies are distributed to commanders down to and including the smallest combat units which are to operate in the area covered, together with

such intelligence summaries as are needed by each echelon of the command. These reconnaissances are continued throughout all phases of the operations.

■ 779. Based on the results of reconnaissance and the task assigned, the commander determines what special troops, equipment, and combat power will be needed to break through the hostile outpost system; he organizes his command into its tactical groupings and assigns missions to each.

The organization of the command into tactical groupings provides for self-sustaining combat units down to and including battalions, so that each echelon of attacking troops will be able to exploit local successes promptly without reference to the next higher unit, and facilitate the advance of adjacent units whose progress is not so rapid. Plans provide for the utilization of every available agency of signal communication.

■ 780. The attacking echelon in the preliminary operations is composed of infantry; chemical troops to lay smoke and open lanes through contaminated ground; engineers with demolition equipment for the destruction of obstacles, mine fields, and hostile emplacements, and equipment and material for the repair of roads and bridges and assistance to tanks; guns of high muzzle velocity and flat trajectory, such as antitank and antiaircraft guns; special troops with flame-throwers and other means of destruction; and such tanks as are necessary and can be spared for the operation without weakening unduly the effort required in the subsequent attack against the main hostile fortifications. Specially selected groups of these troops and weapons are organized into assault detachments.

■ 781. Training of special assault detachments is carried out by having them rehearse the contemplated operation on terrain and against fortifications similar to those to be encountered. The size and number of assault detachments needed in the preliminary operations depend on the size and number of emplacements which must be reduced. Each tactical grouping must have enough trained assault detachments with sufficient special equipment to insure the reduction of all emplacements in its zone of action.

■ 782. Sufficient reserves are disposed in concealment behind the attack echelon to insure success and to meet hostile reaction.

Sufficient artillery of all calibers required to reduce the outpost system supports the attack echelon. Artillery of the heavier types assists the preliminary operations by constant bombardment of the hostile main position, paying particular attention to fortifications from which hostile artillery can bring fire upon troops engaged in preliminary operations.

Reinforcement by combat aviation employing heavy bombs is important. Combat aviation supports the action of the attacking echelon, continues operations against the hostile main position, and performs other missions.

Hostile elements defending the intervals between emplacements must be neutralized.

■ 783. Plans for this phase of the operation must assure coordination and cooperation between all means and methods and must not disclose which part of the main hostile position will be struck later by the main attack of the whole force.

■ 784. Movement to attack positions is accomplished under cover of darkness, fog, or smoke.

■ 785. All forces not required in the preliminary operations are held concealed beyond the range of hostile artillery, and continue training and preparations required for the attack against the main fortifications.

■ 786. The advance through the hostile outpost system is a step-by-step process, determined by the progress of the assault detachments. It must be rapid enough to prevent the enemy from reestablishing the continuity of his front by reCOORDINATING his fires or by counterattack.

■ 787. Fire of heavy artillery and supporting bombardment aviation is directed upon emplacements, massive obstacles, mine fields, and wire obstacles and entanglements. The fire of lighter, flat-trajectory weapons and of flame-throwers is directed against loopholes in emplacements to neutralize the hostile weapons and widen the apertures. Flat-trajectory artillery with high muzzle velocity using direct laying is employed to penetrate armored turrets.

The assault detachments, screened by smoke and taking advantage of accidents of terrain and dead angles of fire, push through and around emplacements under protection of the fire of all available supporting weapons and other troops in the attack echelon.

The assault detachments are protected by fires placed on other localities from which hostile reaction may interrupt their movement, especially flank positions and troop emplacements not being attacked.

Engineers and other troops destroy obstacles, mine fields, wire entanglements, tank traps which are not destroyed by artillery and bombardment aviation, and other light obstacles which may impede the advance. They prepare crossings necessary for the supporting armored vehicles and weapons.

■ 788. When the fire of heavy artillery and bombardment aviation fails to destroy the emplacement and open the way for destruction of remaining hostile personnel by assault, the emplacement is reduced by demolitions placed by engineers or other special troops. Under cover of supporting fires, the assault detachment advances close to the emplacement; final selection is made of the exact location and route thereto for each demolition to be placed, and the preparation of each demolition is completed. Vital spots for demolitions are *the tops of open emplacements; the loopholes; just under or alongside the loopholes, at the base of steel doors and windows, and within sharp angles of emplacements with heavy overhead cover; and on top of emplacements with light overhead cover.* Nonpersistent chemicals, smoke, and thermite also are thrown with demolitions through the tops or through loopholes. Scaling ladders may be necessary in placing demolitions through loopholes or on the top of a high emplacement.

■ 789. When all is in readiness for the assault, signal is given for supporting fires to lift. When supporting fires are lifted, troops detailed to place the demolitions rush forward immediately, cut or blow lanes through any remaining wire, and place and arm their demolitions under protection of smoke, and then take cover. Light demolitions and grenades are thrown through loopholes or through the top without regard to coordination with the firing of heavier demolitions. When the demolitions open the way into the emplacement, the assault troops rush the position and overpower hostile personnel remaining active. Hand grenades, thermite bombs, and light demolitions complete the destruction of bays not neutralized by the first demolitions. When the emplacements are small or of light construction and no longer are obstacles, the assault may be supported by tanks. In the assault of

emplacements which cannot be penetrated by tanks, these weapons best support the action by moving rapidly around them to engage hostile troops attempting to escape and to block the movement of hostile reserves.

■ 790. After the assault of an emplacement, time is taken only for essential reorganization, security elements are pushed forward rapidly, and the advance is continued. When the assault results in prolonged hand-to-hand fighting, local supports are rushed forward to assist the assault echelon. In anticipation of the assault, reserves and local supports are moved up close to the assault lines, disposed to favor their rapid passage through the attack echelon to continue the advance in the event the assault results in serious disorganization. Any halt is dangerous because of the speed with which a local hostile counterattack can be organized and launched, supported by weapons which are already in position and highly coordinated. Small isolated resistances which have been passed over are reduced by special mopping-up detachments from supports and reserves.

■ 791. During the assault, supporting fires are concentrated on those hostile targets which constitute the greatest danger to the success of the assault and a renewal of the advance; special attention is directed toward locating and bringing prompt fire to bear on any hostile mechanized and local reserve elements forming for counterattack. When the advance is resumed, supporting fires conform to the movements and needs during the advance to the next emplacements.

■ 792. During the advance to the next emplacements, units are reorganized as completely as time and facilities will permit; any additional personnel, equipment, and material needed against the next emplacements are sent forward. Necessary adjustments in groupings, of plans of maneuver, and of plans of fire are effected.

■ 793. The speed and regularity of the advance through the outpost system depends in a large measure on the degree of coordination maintained by the commander after the assault of the first emplacements.

Effective signal communication is vital. Liaison between tanks, artillery, the attacking troops, and supporting bombardment aviation is maintained by all possible means of signal communication including radio telephone in the clear.

Liaison officers, extensive wire nets, motor messengers, airplanes, relay runner stations, visual signal stations, and advance message centers are employed in ample numbers to insure timely transmission of information and orders.

Once the operation is initiated, a failure of signal communication must not result in the halt of a tactical grouping whose advance is still possible. When a commander knows the plan of advance through the outpost system and his unit is making progress, he halts in the absence of orders only when he *knows* that his continued progress will endanger unduly the plan of his superior commander.

■ 794. Operations to complete the destruction of the hostile outpost system continue until the main position definitely halts the advance. During these preliminary operations, the general duties of reserves, artillery, and of engineers and special troops not with the attack echelon are the same as for any other type of attack.

THE BREAK-THROUGH

■ 795. While the preliminary operations are in progress, preparation for the penetration of the main fortifications is continued. New air photographs of the position and intelligence summaries are issued as necessary. All equipment, weapons, assault detachments, and other troops to be employed are in readiness to move forward to positions under cover of darkness, fog, or smoke by the time the preliminary operations are completed.

■ 796. The main position will ordinarily be composed of a series of mutually supporting major works, protected by minor gun emplacements, tank obstacles, troop emplacements, and wire entanglements disposed in front of and between them to cover dead spaces which automatic weapons cannot reach from the main fortifications. The front of initial penetration of such a position is carefully selected; it will frequently be determined by the existence of terrain and roads which favor the employment of armored forces in the break-through and exploitation. The dead angles within and between the main fortifications are sought out with particular attention to covered approaches thereto.

■ 797. The width of the front of penetration is limited by the amount and types of artillery and bombardment aviation

available, the capabilities for tank or armored force employment, and the number of trained assault detachments available with proper equipment.

■ 798. In preparation for the penetration, trained assault detachments are organized into a composite unit under a highly resourceful and energetic commander. They are moved into position opposite the selected front. Other units of the division occupy the assigned zone of action as in any other attack. Additional assault detachments are assembled in reserve, close behind the front of the composite unit, to extend the gap of the penetration by operating against the flanks and rear of other fortifications thus exposed.

Arrangements provide for direct signal communication between the composite unit and supporting artillery of all calibers and supporting bombardment aviation. The contemplated action is rehearsed several times. Every man must know the details of his immediate task.

■ 799. Troops transported by aircraft may be landed within and in rear of the larger fortifications on the front of the main attack, to block the movement of reserves and to assist the assault troops by attacking the fortifications from the rear.

■ 800. The amount of ammunition, artillery, and bombardment aviation available, the degree of surprise possible, and the depth of the fortifications on the front of the penetration will determine the length and intensity of preparatory fires prior to the assault. In any event, bombardment of the whole front by artillery and aviation continues from the opening of the preliminary operations. At some time prior to the hour of attack, the bulk of all supporting fires, ground and air, is concentrated on the fortifications on the front of the initial penetration. Bombardment aviation attacks hostile reserves, artillery, and sensitive points in the fortifications which artillery cannot or does not reach. Heavy and medium artillery is concentrated on points in the fortifications which offer the greatest danger to success of the penetration. The fire of flat-trajectory weapons is directed against lighter obstacles and loopholes in the fortifications. Smoke is used extensively to screen the front of attack.

■ 801. Protected by rifle and light machine-gun units, engineers move forward under the preparation fires and open

lanes through undestroyed wire, remove obstacles, blow the mine fields, and prepare crossings over streams, tank traps, and obstacles. Chemical troops open lanes through contaminated areas which cannot be avoided. The composite unit advances as close to the front of penetration as possible, completes its detailed preparations, and waits for the fires to lift. Frequently it will be possible for it to advance well into the gaps existing between the main fortifications during the preparation and destroy minor emplacements before the assault on the principal works.

■ 802. Preparation fires on the front of penetration are lifted on a time schedule or on signal from the commander of the composite unit, depending on orders from higher authority. The bulk of the preparation fires then shifts to the next fortifications to be reduced or is placed to meet hostile reaction to the initial assault. Fires are maintained against fortifications not subjected to assault.

■ 803. Once a breach has been effected and the emplacements on the initial front reduced, additional assault detachments are sent into the gap at once to attack the flanking works in each direction and widen the base of the penetration while the composite unit deepens the penetration by advancing and attacking the next fortifications in its zone. Troops in rear of the composite unit are pushed rapidly through the gap created.

■ 804. Because of the location of the flanking fortifications and troops within or nearby, the enemy is able to organize and launch a strong counterattack with great rapidity. Delay in attacking the flanking fortifications and reinforcing the advance of the composite unit may result in a serious reverse and the loss of the composite unit by hostile counterattack. Troops confronting the flanking works move to the support of the assault detachments as rapidly as fortifications are neutralized.

By breaking the continuity of the enemy front, the coordination of his mutually supporting fires is broken. His extensive signal communication system permits the enemy to reestablish rapidly the continuity and coordination of fires covering his front. Hence, once a breach has been effected its immediate exploitation is imperative.

■ 805. The operations are continued until the entire front selected for a major break-through is reduced. As the attack progresses, the flanks of the penetration are defended against hostile counterattacks and to protect the passage through the gap of troops assigned to exploitation and rear-attack missions.

■ 806. The assault and reduction of a major fortification are accomplished generally in the same manner described for the destruction of a minor emplacement in the outpost system. The only fundamental differences existing between the two are the size of assault detachments, the frontage of initial operations, the additional means required for major demolitions.

■ 807. Only a commander who is actually present at a point of crisis can exercise a direct influence upon the attack echelon. A division or lower commander must be well forward from the time the attack is launched until a complete break-through is effected.

During the attack, much of the coordination originally ordered will fail because of the fluctuating fortunes on the front of attack. This condition will become more pronounced as the gap is widened and the penetration deepened. The initiative, vigor, and boldness of subordinates must be allowed full play. (See pars. 125 and 507.)

■ 808. When the fortified locality has been breached throughout its depth, highly mobile units are immediately pushed through the gap under the protection of troops holding the shoulders of the penetration, of troops landed by air in rear of the fortifications, and of combat aviation. Mechanized forces lead the way. Once through the gap, mechanized forces spread out fanwise, moving rapidly on all roads leading toward the hostile rear and toward the rear of fortifications not reduced, to disrupt hostile lines of communication, destroy signal communication, to block the movement of reserves, and to complete the demoralization of the enemy. Closest cooperation by and coordination with supporting aviation is demanded. The principal targets for bombardment aviation are hostile reserves, signal communication installations, and isolated resistances attempting to block the movement of the exploitation forces. Following the lead of the mechanized forces, the remaining troops of other

arms in the exploiting force move rapidly to complete the isolation of the remaining fortifications and assist in the complete destruction of the hostile field forces. Since it must be expected that the enemy will attempt to close the gap, suitable forces must be assigned the mission of keeping it open.

SECTION II

OPERATIONS AT RIVER LINES

GENERAL

■ 809. Owing to the restrictions which they impose upon movement and maneuver, wide and unfordable rivers exercise considerable influence on military operations. They constitute obstacles to an attack and natural lines of resistance for defensive and delaying action. They assist in screening against hostile ground reconnaissance and in providing security against hostile mechanized attack.

The attack across unfordable rivers requires *special preparations*, both technical and tactical, proportionate to the size of the river and the relative strength of the opposing forces. Data relative to rivers in the theater of operations are contained in maps, air photographs, and terrain studies furnished to the commander of the field forces. These data are supplemented by research conducted throughout operations.

■ 810. *Reconnaissance* of a river line is essential both in attack and defense. The strength of a river line increases with the width and depth of the river and the velocity of the current. Other considerations with a tactical and technical bearing are the banks, the topography of the adjacent terrain, islands, and tributaries, the river bottom, the approaches to the river bank, the practicability of fords, and the danger to be expected from ice floes and freshets.

Streams, ordinarily of little tactical significance, may become formidable obstacles as the result of freshets, high water, or dam construction. In winter, troops may cross on ice of sufficient thickness. On the other hand, ice conditions may increase greatly the difficulty of crossing.

Streams with soft bottoms and steep or marshy banks are obstacles in varying degree to mechanized units.

■ 811. Close *support by combat aviation* is essential in all large offensive operations at river lines. Local air superiority is gained and maintained during the operation.

ATTACK TO FORCE CROSSINGS

■ 812. The defenses of a river line can sometimes be out-flanked. By demonstrations (strong in artillery and air activity) carried out at various points on the river line, an attempt is made to deceive the enemy as to the projected point of crossing, while a strong mobile force makes an unopposed crossing elsewhere and launches an attack to envelop the hostile flank before the enemy can readjust his dispositions.

When the enemy is not actually holding a river line, an effort is made to anticipate him in the possession of the necessary crossings. Mobile forces are advanced quickly on a broad front to seize the desired crossings and to occupy the dominating terrain on the far side in order to protect the crossing of the main body.

■ 813. Troops transported by air and mechanized and motorized units may be employed to seize and hold important crossings until the arrival of leading elements of the main forces.

■ 814. When the enemy is already in possession of a river line which cannot be turned, the crossing must be forced. Under favorable conditions, a river crossing may be forced by rapid and audacious methods. This is accomplished by a bold attack by troops transported by air and by mobile ground forces strong in armored vehicles, bridge equipment, and fast motor boats, strongly supported by bombardment aviation. These forces seize the bridges before the defenders can complete their destruction. If the bridges have been destroyed, the covering forces are put across in motor boats. At the same time bridges are constructed rapidly under hostile fire and the initial surprise so gained is exploited fully.

In the absence of such favorable conditions, a more deliberate operation is required. Hostile troops are promptly driven across the river, and systematic preparations to force a crossing are initiated.

■ 815. In an operation involving the crossing of a river, the actual crossing is a means, not the end sought. The immediate

purpose is to get across quickly and economically and establish a bridgehead which will protect the crossing of the remainder of the command.

In establishing a bridgehead for a large force there are usually three successive objectives on the enemy side of the river: first, a position which will eliminate effective, direct, small-arms fire from the crossing front; second, a position which will eliminate ground-observed artillery fire from the selected ponton bridge site(s) and which can be supported by light artillery on the attacker's side of the river; third, a position which will eliminate all artillery fire from the bridge site(s) and will provide the necessary maneuver space on the enemy side of the river for the command. Attainment of the first objective facilitates the crossing of succeeding troops by assault boats, foot bridges, and troop and vehicle ferries. Attainment of the second objective, coupled with air supremacy, normally will make possible the construction of ponton bridges to cross the bulk of heavier loads. Attainment of the third objective, coupled with air supremacy, gives uninterrupted use of crossing means over the river, permits the protected maneuver of troops in furtherance of their mission, and facilitates the accumulation of supplies on the enemy side of the river.

The assignment of river crossing objectives or missions to units must allow sufficient freedom to subordinate commanders so that successes can be fully exploited.

■ 816. *Reconnaissance* of river lines across the routes of advance is begun by staff and engineer officers at an early stage of the operation. Air photographs showing the nature of the river and the bridge destructions effected by the enemy enable the commander to make an early estimate of the possibilities of crossing and the means required. Ground reconnaissance of the river line can be executed ordinarily only after hostile covering forces on the near side of the river have been driven across the river.

Reconnaissance provides detailed information and furnishes the basis for the selection of the crossing points and the execution of the necessary preparatory measures. Based on the results of reconnaissances and on the tactical situation, decision is made regarding the front or fronts on which the crossing will be forced.

■ 817. In general the attacker should operate *on a wide front* with several determined attacks at separated localities. Secrecy in preparation and deception of the enemy as to the time and place of the main crossing are essential. Feints, deceptive use of smoke, or demonstrations are employed to deceive the enemy. (See par. 820.)

■ 818. In the selection of crossing fronts and the crossing points, both tactical and technical requirements are considered.

Tactically, the attacker seeks concealment for his movement to the river, concealed final assembly areas, a long stretch of river bordered by trees or low hills, undefended crossing points, and good avenues for advance, especially roads, on the enemy side of the river. Dominating ground on the attacker's side of the river favors artillery observation and support of the attack by overhead fire. A salient in the river line toward the attacker favors concentration of combat power and flanking fire on enemy troops defending the salient. While the attacker of this type of salient can rest his flanks on the river after crossing, he may be forced to attack on a narrow front to break through a strong defense at the base of the salient.

Technically, the attacker seeks a moderate current, a water area unobstructed by islands, bars, and reefs, suitable shores, good approaches on both banks, and easy connection to the existing road net. Old bridge sites frequently are advantageous.

■ 819. Having selected the front or fronts on which the crossing is to be made, the higher commander formulates his *plan of action* for the crossing.

■ 820. Tactical groupings are assigned to each *crossing front* and are given instructions regarding time of crossing, objectives, zones of action, assistance to adjacent units, and type and location of bridges to be constructed. Other troops may also be assigned to make *feints* or *demonstrations* at points other than the main crossing fronts so as to deceive the defenders and to draw them away from the main crossing fronts.

A portion of the command is held in *reserve* to exploit the most successful crossing.

■ 821. *Engineer troops and matériel* must be made available early in the planning stage of the operation so that reconnaissances can be made and equipment prepared and properly disposed. Engineer troops with the necessary ferrying matériel normally are attached to the leading combat teams making the crossing on each front. In addition, a reserve of engineer troops and matériel must be provided to erect bridges or to assemble raft ferries, to reinforce the means of crossing at decisive points, to replace losses, and to do other engineer work such as maintenance and extension of the road net.

■ 822. The *unit engineer* is charged with all technical preparatory measures for the crossing and for the distribution of engineer troops and matériel, the construction and guarding of bridges, and the regulation of traffic thereon.

The location of *engineer matériel* prior to the crossing (particularly ponton bridge equipment) must be carefully concealed. Discovery of its presence may disclose the plans of the commander to the enemy. It forms a remunerative target for hostile airplanes and artillery and should be given antiaircraft defense.

The command post of the unit engineer is connected by signal communication troops with the command posts of the superior commander and the commanders on each crossing front.

■ 823. As soon as a tactical group is assigned to a crossing front, its commander and the commanders of troops supporting the crossing on that front direct staff and subordinate officers to reconnoiter the ground over which they will operate, to locate routes of approach, final assembly areas, actual crossing points and routes thereto, and to prepare plans for schedule fires and other details of the crossing operation. In the execution of reconnaissance, restrictions imposed in the interest of secrecy must be observed.

Signal officers reconnoiter the front of crossing for existing wire lines on the near side of the river and determine the need for additional wire lines. They also determine the possibilities of the extension of these lines on the far side. Prior to the crossing radio communication is prohibited or reduced to the minimum in order to preserve secrecy. Once the crossing has been initiated, radio usually is relied upon for communicating with units across the river until telephone lines are established.

■ 824. When the necessary preparations have been made, the superior commander gives the order for the *execution of the crossing*. (See FM 101-5.)

■ 825. The *hour of crossing* is determined by the superior commander. It is more difficult to load and cross boats during darkness than during daylight. This difficulty may be more than offset by the security and secrecy afforded by darkness. The crossing may be timed so that sufficient force to attack the first objective reaches the hostile bank just before dawn. The advance to this objective will then have the advantage of daylight.

■ 826. Shortly preceding the crossing, the bulk of the troops to make the crossing is placed secretly in *concealed bivouac* out of hostile artillery range but within easy night marching distance of their crossing fronts. A minimum of artillery may occupy concealed positions and fire for registration. For purposes of secrecy all artillery may be silenced. Only covering forces and the necessary reconnaissance parties are permitted to approach the river. Covering forces along the river are designated from troops other than those to make the initial crossing.

■ 827. Ordinarily all supporting troops go into position under cover of darkness on the night of the crossing. Leading assault units move to *final assembly areas* where they are met by engineer troops with assault boats, footbridge, or other crossing means.

Final assembly areas have the following characteristics: accessible for trucks which bring up engineer matériel, defilade, easy identification, concealment from air and ground observation, and several direct and concealed routes to the crossing points.

■ 828. The *first assault waves* on each front, led by engineer guides, carry their assault boats from the final assembly areas to the water's edge and launch them on a broad front. Lateral movements and the massing of troops at the river bank are avoided. Measures are taken to regulate traffic and to suppress noise during the movement to the river. Upon arrival at the crossing points troops embark immediately and are ferried to the far bank where they disembark, overcome any enemy resistance near the bank, and proceed to the first

objective. Departures from the final assembly areas are timed to permit leading units to cross simultaneously on a broad front, but once these units leave the final assembly areas they do not halt and no attempt is made to maintain alinement between boats. Normally, there is no firing from the boats when the crossing is made under cover of darkness.

The movement from final assembly areas to the far shore is under control of the engineer troops.

■ 829. The engineer crews return the assault boats to the near shore for the *second wave*, which has moved from its forward assembly area. If the current is swift, allowance for drift must be made in fixing time or place of meeting the boats. If boats are to be reused, allowance must be made for probable losses during the crossing of the first wave. It may be necessary for *succeeding waves* to carry additional boats, or for engineers to furnish individual ponton boats or raft ferries to carry these waves.

■ 830. *Footbridges* may be used for crossing first waves over narrow streams. Their construction is difficult under small-arms fire. Ordinarily they are used to cross succeeding waves of foot troops, particularly after the first objective has been attained.

■ 831. *Ponton raft ferries* are provided to cross vehicles which will be needed before it is practicable to build the ponton bridge. Ferry construction usually is practicable after the first objective has been seized. Ponton raft ferries often are continued in use after the bridge is built to serve as an alternate crossing means and to handle return traffic.

■ 832. *Alternate plans* are prepared for exploiting success on any crossing front by assigning troops from other fronts or from the general reserve to cross on the front where the crossing has been most successful.

■ 833. In addition to the fires of organic weapons, the crossing of tactical groupings is supported by artillery, combat aviation, smoke, and the fires of supporting weapons of the general reserve.

■ 834. Supporting fire may be opened several hours prior to the initial crossing against an enemy prepared to resist in a well organized position, or may be withheld until after the crossing is discovered, in order to obtain surprise.

■ 835. The *artillery* gives close and continuous support to the advance. As soon as the assault waves advance from their first objective, the artillery begins displacement of individual batteries across the river. Later the mass of the artillery is advanced, the displacement conducted in such a manner as to assure continuity of artillery support. Artillery observers and liaison groups, with the necessary means of signal communication, accompany the assault units during the crossing and advance to the objectives.

■ 836. *Antiaircraft defense*, both by ground units and aviation, is centered around the crossing fronts and particularly the ponton bridges. A portion of the automatic weapons of the antiaircraft defense is crossed to the far bank by boat or ferry before construction of the bridges is started. Continuous protection for the bridges is maintained as long as required.

■ 837. *Smoke* can conceal river crossing operations from ground observation but ordinarily not from air observation. It frequently is used during daylight hours in connection with feints or demonstrations in addition to concealing the actual crossing of the initial waves. The use of smoke places additional importance on the marking of embarkation points and bridge sites and the routes leading thereto.

■ 838. The first objective having been taken and supporting infantry units having been brought up behind the initial wave, the attack is continued without delay on the second objective. Since this objective is selected in order to deprive the defender of his ground observation of the river, considerable resistance may be expected. Aggressively used, mechanized units may be effectively employed at this time.

■ 839. The second objective having been taken, or the hostile light artillery neutralized, the superior commander normally directs the *construction of the ponton bridge* (or bridges). The greater the number of bridges made available, the quicker and surer the crossing. The construction of bridges from local materials requires much time and labor. Quicker results are obtained from the use of ponton equipment.

Alternate bridge sites are selected in advance. Transferring operations to an alternate site after the equipment is unloaded at the first site is a time-consuming and difficult

operation. Decision for such a move rests with the superior commander.

■ 840. The bridge having been completed, the remainder of the artillery and other troops are crossed and a coordinated attack, if necessary, is made on the third objective. If construction of a bridge should prove impracticable, the passage of all troops and equipment is by ferry. When the third objective has been attained, subsequent operations may be of an offensive or defensive nature as the situation may demand.

■ 841. *Control* during the crossing and advance to the first objective is mainly a responsibility of the leaders of small units. Capture of the first objective gives an opportunity for the next higher commanders to resume control and direct the attack on the second objective. Since the capture of the second objective usually is followed by the construction of ponton bridges and the crossing of artillery and the remainder of the troops, the superior commander may direct a coordinated attack on the third objective. The period of delay on each objective is as brief as possible. Every effort is made to conduct operations in such a way that the third objective will be seized and held in the minimum period of time. Signal communication is maintained initially by radio between forces on the opposite sides of the river. Later, wire lines may be laid across the river and wire communication established between the principal command posts.

■ 842. Armored divisions, cavalry divisions, and other *mobile units* effect river crossings by advancing rapidly and boldly to seize the necessary crossings and bridgeheads on the enemy's side of the river. If this is impossible, they effect wide detours to weakly defended or undefended points on the river and then cross. If all crossings are destroyed, horse cavalry units may swim and armored or mechanized units may be ferried until bridges can be constructed.

DEFENSE AGAINST CROSSINGS

■ 843. An unfordable river may be employed as an obstacle in front of a defensive or delaying position, or as an aid to defensive-offensive action which seeks to strike the enemy while his forces are astride the river. A river line loses much of its value as an obstacle if the enemy is not forced to make a direct attack; it becomes an obstacle to our own

troops if successful counteroffensive action is to be followed by an exploitation.

Holding a river line in such force as to leave available insufficient reserves destroys the flexibility of the defense and exposes it to immediate defeat as soon as the river line has been pierced.

■ 844. The commander must insure the complete *destruction of all bridges and fords*, which cross the river within his sector, to prevent them from falling intact into the hands of the enemy. The actual destruction is usually a mission of the unit engineer. Unless specifically forbidden by higher authority, any bridge or ford may be destroyed. When it is considered desirable to preserve such crossings until the last possible moment, full authority to complete their destruction is delegated to any member of the bridge or ford guard. When it is apparent that the crossing cannot be kept from falling into enemy hands, *it must be destroyed*.

■ 845. A river may be used as an obstacle directly in front of the main line of resistance of a position. (See sec. II, ch. 10). The river bank positions are held in strength; adequate reserves are provided to intervene at decisive areas. Such a defense is possible only when large forces are available on the front to be held and the enemy is unable to turn or avoid the position. It subjects the troops in forward areas to the full force of the enemy artillery preparation.

Emplacements are so located that the opposite bank and its approaches are held under fire and the enemy's attempts to cross are frustrated in their beginning. Salients in the river line and open terrain dominated by the enemy are lightly held but are capable of being covered by the concentrated fire of weapons.

The *artillery* is employed as in the defense of a position, except that a part may be placed well forward to cover the most likely crossing places, the enemy's probable assembly positions, and avenues of approach. The artillery must be prepared to concentrate its fire against the main crossing when it is discovered.

Tanks are held in reserve to be employed against those hostile elements which have gained a foothold on the friendly side of the river and constitute the greatest threat of the integrity of the position.

■ 846. River lines may be defended by *defensive-offensive action*. (See sec. IV, ch. 9.) Unless the situation and the strength of the available forces indicate the advisability of holding the river line as a line of resistance, it is best usually to hold the mass of the forces in readiness at such distance to the rear that it can intervene promptly at any point where a crossing in force may be attempted. The river line then is held by relatively weak detachments. Stronger detachments with local reserves are posted at the most probable points of crossing. The operations of the advanced detachments are organized in accordance with the doctrines governing outposts. It is their mission to force the enemy to disclose the full power of his supporting fires, to discover hostile crossings, and to prevent hostile troops from establishing themselves in bridgehead positions before the arrival and attack by the general reserves.

■ 847. In defensive-offensive action, some artillery may be attached to the outpost detachments. The mass of the artillery is held in readiness prepared to support the attack. It is then so emplaced that it can concentrate its fire in the critical area and support the attack in the decisive direction. Since the mass of the hostile artillery will still be on the far side of the river, much importance attaches to the neutralization of hostile air and ground observation regulating the enemy's artillery fire.

■ 848. In defensive-offensive action, the attack of the general reserves is made as soon as the hostile main crossing is recognized. The plan for this action is prepared beforehand. Success depends upon the commander's ability to launch the attack at the proper time and in a decisive direction. It must be launched before the enemy has established himself in a bridgehead position. To this end, efficient signal communication must be assured and reserves must be prepared to move promptly and rapidly.

The mobility of the troops held in reserve is increased by the assignment of motor transportation.

Decisive results are promised by the prompt employment of mechanized units and combat aviation against hostile units which have already crossed the river and by air attack of bridges and of troops engaged in ferrying operations.

■ 849. In any defense of a river line *covering forces* remain on the enemy's side of the river to maintain contact with the enemy, delay his advance, and determine his assembly positions and probable crossing places. When forced to retire, these advance elements withdraw across the river. Timely measures are taken to destroy the crossings after the last elements have withdrawn across the river, or at such earlier time as may be necessary to prevent the crossings from being seized by the enemy. On wide rivers, after the covering force has withdrawn, contact with the enemy may be maintained by use of patrol boats.

■ 850. The primary missions of the *engineers* are to destroy fords, bridges, and matériel which may assist the enemy in crossing; to reconnoiter the terrain along the river; to assist in organizing the ground; and to keep the roads in condition for rapid movement of reserves. Engineers also block with obstacles and mines the hostile avenues of approach to the river, embarking points, and landing points. Floating mines, rafts, and fireboats may be prepared and held in readiness upstream. Preparations are made for illuminating the water area at night.

■ 851. *Combat aviation* operates against ferrying and bridge equipment before it reaches the river; against ferrying and bridging operations; against troops assembled for crossing; against hostile artillery; against hostile aviation, and supports the main attack of the general reserve.

■ 852. *Signal communication* is established so as to insure rapid communication with the outpost and covering forces and the quick transmission of orders to the reserve and the artillery. Multiple wire circuits are laid along alternate routes to increase the probability that some of them may escape damage from the heavy fire anticipated.

■ 853. *Cavalry* units are employed initially on reconnaissance or security missions on the enemy's side of the river. Later they protect the flanks of units on the river or are held in mobile reserve.

The principal mission of the *antiaircraft* artillery is to protect the reserves and the artillery. Preparations are made to reinforce rapidly the antiaircraft defense in critical areas. Sound locators and searchlights are of great value in detecting and illuminating hostile crossings.

■ 854. In a *retrograde movement* when the river line is to be held as a defensive or delaying position, the retiring columns cross at the available bridges which are not under hostile artillery fire. If the crossing places are insufficient, the construction of additional bridges or ferries may be necessary. Antiaircraft defense is established on both banks of the river line to protect the bridges and crossing places.

Trains, motorized columns, and a part of the artillery cross first. Routes leading to and from the bridge approaches and crossing places are plainly marked. Staff officers with detailed instructions for march sequence and future action direct units to their destinations. Traffic is regulated strictly during the retirement across the river. Bridges and fords are destroyed to prevent them from being seized by the enemy and arrangements are made to ferry the last elements of the covering forces.

As soon as it has moved across the river, the artillery which crossed early is placed in position to protect the crossing places and cover the retirement of the remainder of the command. This echelon later is reinforced by the remainder of the artillery after it has crossed the river. At the earliest practicable moment, a plan of artillery defensive fires is prepared which will take advantage of the long range and flexibility of artillery fire to lay down interdiction and counter-preparation fires on the hostile routes of advance and assembly positions.

■ 855. The river may lie *in rear of a defensive position*. This is equivalent to defending a bridgehead and the position selected should eliminate all enemy artillery fire from the bridge sites and provide the necessary maneuver space. An even greater distance from the river may be desirable in order to find suitable terrain and to allow space for retrograde movements during the conduct of the defense. Plans must be made for withdrawal across the river.

SECTION III

NIGHT COMBAT

■ 856. Night combat is characterized by a decrease in the effectiveness of aimed fire and by a corresponding increase in the importance of close combat and the fire of fixed weapons laid on definite targets or areas by day; by difficulty in

movement, troop leading, and the maintenance of direction, cohesion and signal communication; and by a more highly sensitive morale of the troops.

Decrease in the effectiveness of fire permits the use of closer formations without exposure to excessive losses; difficulty in the maintenance of control and direction necessitates limited objectives which may be approached by well-defined routes; the more sensitive morale of the troops increases the effects of surprise obtained by the offense and the importance of security measures on the part of the defense.

Fog or smoke produces conditions of combat similar to darkness. Because of the uncertain duration of a fog and the amount of ammunition required to establish and maintain smoke concentrations, operations based on concealment provided by fog or smoke require rapid execution.

■ 857. An unexpected collision of troops at night, or combat which extends into the night, usually develops into a standing fire fight and a suspension of movement. As a rule, night combat can be conducted successfully only when there is time for the preparation and distribution of a well-conceived plan and for thorough reconnaissance by all leaders during daylight.

■ 858. In night combat, the influence of unit commanders on their troops is greatly diminished. Tactical operations and troop leading are surrounded with greater difficulties; the uncertainties of combat exercise a greater influence than in daylight operations.

■ 859. *Night attacks* are made to complete or exploit a success, to gain important terrain for further operations, to avoid heavy losses which would be incurred by attacks in daylight over open terrain, or to attract hostile reserves.

■ 860. Simplicity of plan, careful preparation, secrecy, surprise, and cohesion in execution are prerequisites to a successful night attack.

■ 861. *Surprise* is the most essential feature of night attack. Preparations for night combat, whether made during daylight or darkness must avoid betraying the locations or intentions of the troops. The operation itself must be conducted with precision and secrecy.

■ 862. The difficulties of night attacks increase with the size of the command. They therefore usually are undertaken only on a limited scale and with limited objectives.

■ 863. Night attacks are made preferably by fresh troops or by reserves of troops in contact with the enemy. The best available troops should be used. When made by troops already in contact with the enemy, many details of execution are left to the commanders of front-line units.

Night attacks are often the manifestation of an aggressive leadership, which is determined to bring about a conclusion without delay. Morale of the troops and quality of the leadership, especially in the lower grades, rather than numbers, are likely to measure the success attained.

When fresh troops are designated to make a night attack, their approach march is protected by troops already in contact with the enemy.

■ 864. The *hour* at which a night attack is to be made depends upon the object sought. The exact hour of attack is kept secret as long as possible.

An attack launched during the first hours of darkness frequently strikes the enemy before he has had time to organize his position or his artillery support. It may also anticipate possible night operations on the part of the enemy. It may be delivered after victorious combat in order to frustrate the enemy's attempts to organize a withdrawal at nightfall or to consolidate a position for defense.

An attack during the last hours of darkness may be advantageous as a preliminary operation to a general attack at daybreak because it gives the defender no time to reorganize.

■ 865. The decision to attack should be made while there still is sufficient daylight to make all preliminary reconnaissances and preparations. Reconnaissance should include observation of the terrain at dusk, so that both the day and night aspects may be studied. Easily identified direction points are located and provision is made for guides.

■ 866. Subordinate commanders are carefully instructed concerning the terrain, the objective, and the direction of attack. Routes of approach are carefully marked, guides are provided, and compass directions are given.

■ 867. *Orders* for night attacks are formulated with more than usual detail. Routes of approach, assembly positions, line of departure, and objectives are designated with the utmost exactness. Orders include the rate of advance; the formations to be employed; means for mutual identification of troops; measures for flank protection and for maintenance of direction and contact; the composition, initial position and mission of the reserve; the course of action to be followed in case of success; the signal for withdrawal in case of failure, and a rallying point for each subordinate unit in case of withdrawal. Precise and detailed instructions for maintaining secrecy are issued; the use of lights is forbidden; rifles are generally left unloaded; bayonets are fixed; vehicles and animals are left at assembly positions and other measures to insure silence and secrecy are prescribed. The time of attack may be included in the order or may be announced later.

■ 868. In the conduct of night attacks, only the *simplest formations* are employed. Normally, the smaller units advance in column until close to their objectives, when dense skirmish lines are formed and the enemy is rushed with the bayonet without firing. Each column is given a definite direction and objective. Contact is maintained between columns and every precaution is taken to avoid their collision.

The assaulting columns are followed closely by their supports and local reserves.

The supporting weapons of the attacking force may be placed in position for flank protection of the initial assault. When the terrain is favorable for overhead fire, they may be emplaced in a rearward position to support the attack on signal or to cover a withdrawal. The advance to the objective is so timed as to permit close support of the assaulting troops at daybreak.

General reserves are held generally well in rear and preferably on a flank, prepared to move promptly to the objective or to cover a withdrawal.

■ 869. The particular circumstances attending each situation usually will indicate whether the assault should be prepared by artillery fire. Where *artillery support* is indicated, a short but violent preparation generally will suffice. This preparation is lifted on a time schedule. The artillery holds itself

in readiness to intervene promptly and energetically in accordance with a prepared plan of fire to box off the zone of attack or to cover a withdrawal. The artillery neutralizes located hostile artillery.

■ 870. On capturing their objectives, units are reorganized and promptly disposed to meet a counterattack. Their further conduct is prescribed in the attack orders.

■ 871. In night combat, the *defense* has the advantages of better knowledge of the terrain and of organized defensive fires covering the principal avenues of hostile approach.

■ 872. Vigilant outguards, active patrolling well to the front, and illumination of the foreground must be relied upon to give timely warning of attacks. Gaps that cannot be covered effectively by fire from adjacent units are occupied at night by elements in support. When a hostile attack is suspected or known to be in progress, supports and local reserves are brought closer to the main line of resistance.

■ 873. Obstacles and the fire of fixed weapons are the principal means used in breaking up the assault. Small-arms fire is opened as soon as the alarm is given and combat outposts have been withdrawn. Local supports and reserves, using the bayonet only, counterattack, preferably the enemy's flanks.

■ 874. Night *raids* may be used to capture personnel, obtain identifications and determine details of the hostile position, and especially any major changes in the enemy dispositions.

When a *raiding force* has accomplished its mission, it withdraws on a previously arranged signal. A route of withdrawal other than that employed for the advance is used if practicable. During the withdrawal, the reserve of the raiding force is utilized to cover the withdrawal and to protect its more vulnerable flank. Fires of the artillery and other supporting weapons are employed to neutralize the enemy advance elements and supporting weapons. The artillery neutralizes located hostile artillery.

■ 875. As a rule, delaying action at night can be executed only by small units or detachments which operate and retire along well-defined routes. Rearward movements are regulated carefully to avoid losses by fire from friendly troops in rear.

When the enemy possesses great superiority in combat aviation, daylight maneuver of large units may be impracticable. Disorganization and delay of advancing hostile ground columns may be accomplished by the night attack of small groups against marching columns, bivouacs, billets, or motor parks.

SECTION IV

COMBAT IN TOWNS

■ 876. Towns offer concealment for troops and weapons and protection from fire of weapons and mechanized attack. Consequently, they are often naturally strong defensive areas. On the other hand, they are conspicuous topographical features of which exact details are either available or readily obtainable. Fires started by hostile incendiary ammunition may make towns untenable.

■ 877. Combat within the limits of a town is characterized by reduced effectiveness of fire and observation, by increased importance of close combat, and by difficulty in control of troops. Fighting is at close range, and the outcome depends largely upon the initiative and aggressive leadership of subordinate commanders.

■ 878. A town strongly held by the enemy may be taken by fixing the garrison by a holding attack while so directing the main attack as to isolate the town from the support of neighboring defensive positions. When immediate capture of the town is essential, the main attack is directed against the flank or rear of the town in order to secure the advantages of enveloping attack. When frontal attack cannot be avoided, the attacker concentrates on the capture of the near edge of the town by the methods applicable to the attack of any organized position and then reorganizes his effort to continue the advance through the town. The action within the town necessarily is decentralized to subordinate infantry leaders since lack of observation of the action precludes satisfactory centralized control. The attack is pushed rapidly through the town to capture quickly the exits on the far side. Assault units are freed from the responsibility of mopping up the town.

■ 879. The larger the town and the longer it has been held by the enemy, the more thorough must be the preparations

for attack. Visual and photographic reconnaissances determine the defensive organization of the area and the nature of defensive works and furnish pertinent data to all elements participating in the attack.

■ 880. When the enemy has organized the town into a strongly fortified position which cannot be avoided or out-flanked, the advance may have to be made frontally, strongly supported by artillery, combat aviation, and other supporting weapons. When the fire of the supporting artillery and other supporting weapons is lifted, the assault echelon pushes through the defensive area in a series of bounds; supports and reserves mop up and organize the area for defense against hostile counterattack. The attack is continued through the town to the far side in a similar manner.

■ 881. Bombardment aviation is of first importance in reducing a stubbornly defended city. Destruction is methodical and ordinarily progressive from front to rear.

Mechanized troops are of little value in combat within a defended town. Their use for such combat will probably result in excessive casualties, both in personnel and vehicles.

■ 882. In the *defense*, towns often are included in the organization of the defensive position, especially when mechanized attack may be expected.

In organizing a town for defense, the main line of resistance is established within or in front of the town. After clearing the fields of fire, its defensive capabilities are developed by organizing the outlying buildings and enclosures to form salients from which the front and the flanks of the town can be covered by flanking fire. Obstacles then are constructed within the town and groups of buildings are organized defensively to oppose any effort to penetrate.

■ 883. To prevent the enemy from passing by on either side of the town and effecting capture by attack against the flank and rear, a *mobile reserve*, strong in mechanized units, is held outside the town in a concealed position, prepared to break up the enemy's outflanking maneuver.

■ 884. Towns are favorable to delaying action as they keep the attacker in ignorance of the strength of the forces confronting him and provide concealment and cover for screening the withdrawal.

SECTION V

COMBAT IN WOODS

■ 885. In many respects, combat in woods is similar to that in towns (sec. IV). Often, in combat in woods, observation and control of troops are even more difficult than in towns. Some woods, owing to their size or location, are naturally strong defensive areas. Other woods, however, may have little or no defensive value and may even be advantageous to the attacker by providing concealed routes of approach into the defensive position. Small woods are avoided as they are clearly marked and draw fire.

■ 886. The *attack* usually seeks to avoid isolated wooded areas included in the enemy's defensive position by passing them on either or both flanks while neutralizing their edges by fire or smoke. The artillery blinds the enemy's observation by smoke and neutralizes the hostile weapons that are capable of delivering flanking fire against the attack. During dry weather incendiary bombs are highly effective. Small wooded areas may be neutralized with chemicals.

■ 887. If avoiding the woods is impracticable and their possession is necessary, the attacker seeks to capture the woods by enveloping action. When enveloping action is inexpedient, the woods are attacked frontally. The attack is directed first against the salients which are neutralized by the fire of the artillery and other supporting weapons, reinforced by that of combat aviation. This supporting fire is maintained until the assault echelon is ready to rush the salients, when it is lifted to the reentrants of the woods, or to suitable targets within or on the far side of the woods.

The near edge of the woods is carried like any other position and then is used as a line of departure for the advance through the woods. The dispositions to be taken for this second phase of the attack depend largely upon the character of the woods. In sparse woods, formations are employed resembling those on open ground, but with greater density in the leading echelon. In dense woods, small columns are more effective in the leading echelon. Measures are taken to insure direction, cohesion, and signal communication between the columns. Supports are formed in column and closely

follow the assault units. The vulnerability of the flanks to attack requires special measures for their protection.

■ 888. All commanders must be watchful to prevent combat groups from assembling on or near roads and trails since these will be covered by the enemy's system of defensive fires. The enemy's strong points are outflanked by an advance straight through the woods off the roads and trails. To avoid confusion and to prevent friendly troops from firing into each other, it may be necessary to regulate the advance by bounds. Reserves are disposed so that they will not become involved in the fighting of the assault echelon and can be engaged where the greatest progress is being made.

■ 889. Before debouching from the woods and while still far enough from the edge to be concealed from the enemy's view, the command is disposed for fighting on open ground, and arrangements are made for support by the artillery and other supporting weapons. As the edge of the woods presents a well-marked target for hostile fire, the attacking forces make their egress rapidly to seize an immediate objective beyond the edge of the woods. Whenever possible, this objective should mask the edge of the woods from hostile ground observation and small-arms fire.

■ 890. The movement of combat vehicles is regulated so as not to block the routes of advance through the woods. If the woods are not too extensive, vehicles are held on the near side until the attacking echelon has reached the far side.

■ 891. As a *defensive position*, the edge of the wood has the objection of presenting a clearly-defined target to the attacking forces. The main line of resistance is therefore usually established either in front of the edge, or within the woods. Since a position in the interior of the woods has the disadvantages of restricted view and limited field of fire, the observation elements of the outpost are advanced close to the edge of the woods. The routes forward and to all positions in rear are reconnoitered and made known to all concerned.

While holding up the attacking units by means of obstacles, the defense seeks to break up the cohesion of the attacker's dispositions, lead him into false directions, and take the attacking troops under flanking fire. Natural or cleared lanes through the woods assist greatly in the development of flank-

ing machine-gun fire and in detecting and holding up a hostile advance. Supports and local reserves are posted with a view to counterattack against the enemy's flanks. Full advantage is taken of the opportunities for ambush, surprise, and counterattack.

In wooded areas, close support by artillery becomes difficult. Fields of fire of all flat-trajectory weapons are extremely limited. The fire of high-angle weapons is not equally affected; a little clearing will permit howitzers to be used.

■ 892. When there is a possibility that the enemy may launch his attack on either side of a wooded area, preparations are made to repel the hostile groups with flanking fire from the flanks and salients. Combat groups are located in the area outside the woods to oppose the enemy's outflanking maneuver. Tanks held concealed in the woods, with routes reconnoitered and prepared, will add power to the counterattack of the defender.

■ 893. Numerical superiority is of little advantage in the close combat which usually develops in fighting in woods. When close contact is imminent, bayonets are fixed and preparations made to engage the enemy with rifle and machine-gun fire and to meet him in hand-to-hand combat with hand grenades and the bayonet.

SECTION VI

MOUNTAIN OPERATIONS

GENERAL

■ 894. Mountainous terrain offers no insuperable obstacles to the conduct of military operations, even in cold weather, if troops are properly *equipped, clothed, supplied, and trained*. In general, mobility is retarded, movement is restricted, fire-power and fire effect are reduced, and signal communication and supply are more difficult.

■ 895. Mountain warfare is characterized primarily by difficulties which terrain offers to movement. The inaccessibility of certain regions restricts areas in which troops are able to operate. The restricted nature of certain areas such as narrow valleys and defiles limits the strength of forces which can be maintained and moved therein. The inadequate road net found in sparsely settled mountains enhances the military

value of existing roads, adds importance to heights which dominate them, and slows down the operations.

Key terrain features consist of heights which dominate valleys and lines of communication with observation and fire; passes which permit movement through mountains; and roads and railroads which must be secured for supply purposes.

■ 896. In *mountain combat* the commander is limited by terrain as to the means which he may employ. Success depends more upon proper adaptation of available means to the terrain than upon their power. Maneuver of small units and the initiative and leadership of subordinate commanders are of the highest importance in mountain warfare. They are favored by the concealment which is available for movement, by the diminished effect of firepower resulting from defilade, and by facilities for observation. The plan of maneuver for the force as a whole is more closely subject to considerations of terrain than in ordinary regions. The problem often resolves itself into a matter of striking hostile routes of communication and of defending one's own routes. The actions of small semi-independent units in seizing or defending heights which dominate lines of communication or of fighting to seize or block passes and other defiles on routes of communication become of increased importance.

■ 897. When formulating plans for operations, possibility of sudden changes in weather must be considered. Arrangements are made for frequent periodic weather reports. Alternate plans are prepared to provide for changed weather conditions.

■ 898. Terrain difficulties and rigors of climate may, especially in winter, render tactical considerations subordinate to those necessary for providing troops with shelter that is indispensable for their conservation.

■ 899. The theater in which the forces are to operate will necessitate special equipment to fit the climate, the character of the terrain, and the type of hostile forces to be encountered. They should ordinarily have a preponderance of high-angle fire supporting weapons; a high percentage of pack transportation; an adequate amount of radio and visual signal communication; and a high degree of logistical self-containment.

Necessary specialized training includes use of skis and snow-

shoes, visual signaling, parachute jumping, use of both pack and motor transportation, mountain climbing, use of the gas mask in rarefied atmosphere, and marksmanship.

■ 900. Decentralization of operations is characteristic of mountain warfare. Tactical groups usually operate semi-independently within terrain compartments in order to carry out the plan for the force as a whole.

■ 901. *Infantry* is called upon frequently to operate without support of artillery or other arms. Infantry operations are more fatiguing than on ordinary terrain.

Machine-gun units seldom find fields of fire which permit them to utilize full grazing effect. The sharp relief offers opportunities to support advancing infantry with overhead fire. Machine guns are suitable for defense of a pass or for placing barrages in valleys. Mortars and grenades attain increased importance due to the increased amount of defilade.

■ 902. *Cavalry* may include both mechanized reconnaissance and horse elements. The missions of mechanized elements include distant reconnaissance to the front and flanks, flank protection, and seizure of distant defiles which can be held by, or in which delay can be effected by, small units with considerable firepower. Horse elements are employed on similar less distant missions; some are attached to tactical groups for reconnaissance and security purposes. Cavalry may be held as a mobile reserve.

■ 903. The howitzer is best adapted for *artillery support* in mountainous terrain. Ordinarily flat-trajectory cannon can be used only at long ranges because of the necessity of clearing masks and reaching objectives defiladed by steep slopes. Horse-drawn and motorized artillery units are emplaced near the roads; pack artillery is capable of following foot and mounted elements and taking defiladed positions in the more difficult terrain overlooking the valleys.

Control of artillery is decentralized.

Because of the difficulties in the conduct of artillery fire with air observation, greater dependence is placed on ground observation in mountainous terrain. Observation posts must be reconnoitered and established early and provision made for liaison observers with the forward echelons to assure close and timely support.

The effectiveness of counterbattery is diminished because of the difficulty of locating hostile batteries. The effectiveness of interdiction fires is increased because of the number of definite points which the enemy is compelled to pass.

■ 904. The importance of *engineers* increases with the difficulties of the terrain. Maintenance of existing roads and construction of new roads are of primary importance. The existence of numerous sensitive points on the few highways facilitates demolition and increases their effect. The difficulties of access to certain positions frequently necessitate use of aerial tramways in a stabilized position. The rocky soil requires employment of explosives for constructing even the simplest of entrenchments.

■ 905. The hazards of flying in mountainous regions place a great restriction on the use of low flying *combat* aviation. The restricted road net often offers a favorable opportunity for bombardment aviation to block critical road junctions and to attack troops in defiles.

Many occasions arise for employment of parachute troops. Such occasions include seizure of an important distant defile, and quick movement of a force to operate against the hostile flanks or rear.

■ 906. Mechanized units suffer so many restrictions in mountainous terrain that their effective employment is generally very limited.

■ 907. *Antitank* units are especially effective in the mountains as their weapons are easily placed and hidden, and mechanized vehicles are confined to a few avenues of approach and the nature of the ground may make their progress slow and difficult.

■ 908. The operations of the *signal units* are affected by the scarcity of commercial wire lines, by difficulties of laying wire, by "dead spaces" in radio reception, and by terrain barriers between adjacent corridors in which troops are operating. Great reliance is placed on radio, visual signaling, and messengers.

The command post of a small unit usually is located near the observation post of the unit. Command posts of regiments and larger units should be near road centers, and, if practicable, near a landing field.

RECONNAISSANCE

■ 909. *Reconnaissance* in mountain warfare is facilitated by the restriction of enemy movements to the available road net and by numerous defiles, but it is made difficult by changing weather conditions, rugged terrain, and the concealment and cover available for hostile troops. The apparent impossibility of certain areas must not lead to the conclusion that they are inaccessible to hostile troops.

Maps of mountainous regions seldom are accurate. A correct knowledge of the terrain can be gained only by a study of the ground itself, supplemented by a study of air photographs. The employment of reliable local guides may be advantageous.

Aviation primarily seeks information along routes of communication, especially at defiles and at valley intersections.

Mechanized reconnaissance vehicles are pushed out for distant reconnaissance; however, absence of alternate routes and suitable turn-arounds offers them little opportunity for escape when surprised and ambushed. Horse cavalry patrols can utilize trails for reconnaissance purposes.

Ground observation is unusually important in mountain operations because of decreased efficiency in air observation. Some observation posts offer very distant views and afford opportunity for extended lateral observation. Observation is subject to sudden blinding due to atmospheric changes. Observation posts are echeloned in altitude as well as in width and depth.

Offensive reconnaissance executed by specially trained detachments, operating in difficult areas which often are weakly guarded, will produce excellent results. The capabilities for reconnaissance and counterreconnaissance by small elements operating with boldness should not be overlooked.

Close reconnaissance is conducted by dismounted patrols equipped with radio and visual means of signal communication. It is initiated early and pushed well to the front. It is tedious and fatiguing but may be facilitated considerably by use of local guides.

MARCHES

■ 910. All available roads and trails are used for movement. Since displacements within tactical groups or columns are

difficult during the march, the march order of units must be such as will facilitate their entry into action.

■ 911. The rate of march in mountains is influenced by the elevation above sea level, steepness of slopes, and other factors. The rate of marching and the rate of climbing of well-seasoned troops is not greatly affected by changes in elevation of less than 5,000 feet above the altitude to which they are accustomed; greater increases in altitude cause sharp reduction in marching and climbing rates.

The total time required in marching and climbing under favorable conditions on fair roads and trails is approximately the time required for marching the map distance plus 1 hour for each 1,000 feet of ascent.

When frequent steep slopes are encountered, greater distances between foot or animal elements are required.

Rests depend upon the mission, the length and difficulty of the march, and the condition of the troops. On long marches, frequent short rests may be taken in addition to the customary regular halts.

At a distance from the enemy, effort is made to utilize favorable routes in valleys in order to reduce fatigue of troops. Motors and air transport sometimes may be used for rapid displacement of reserves.

In *winter*, travel may be possible only for specially equipped foot troops, as support artillery and pack trains may be completely immobilized. In such cases bombardment aviation may be an effective substitute for artillery, and transport aviation or dog teams may be the only means of supplying marching columns.

■ 912. *Security on the march* calls for special measures due to the distant observation which may be available to the enemy, slowness of movement, increased possibilities of surprise by ambush, and terrain restrictions on the movement of flank security detachments. Tactical groups usually will march in terrain corridors separated by terrain obstacles which deprive them of mutual support. Establishment of all-around security for each tactical group is necessary.

Special measures which afford security in mountains include movement by bounds of the main body and the advance guard; seizure of the opposite and the lateral crests previous to the entry of a column into a valley; dispatch of

detachments, including troops transported by air, to seize critical points of the terrain to assist the advance through or egress from the mountains; utilization of darkness and fog; utilization of defilade in the area subject to hostile observation and fire; employment of rear guards even during an advance; and protection by combat aviation.

Because of the difficult routes followed by flank security detachments and the fatiguing nature of their operations, it is usually necessary to provide relieving detachments at lateral or branch valleys. Consideration must be given to the fact that such detachments are ordinarily unable to rejoin their units until after the completion of the march.

■ 913. When contact becomes imminent, advance guards, exploring all routes in their zones of action, endeavor to seize terrain objectives which will cover the deployment of the main bodies. Because of slowness of movement of troops developing for combat, advance guards will act independently for longer periods of time than is the case on more normal terrain.

■ 914. It is difficult, and as a rule unnecessary, to obtain *security at the halt* with a continuous screen of outposts. A more effective method is to send out detachments to occupy heights in the principal directions from which the enemy might fire on the main force. It is advantageous to send small groups well out to occupy dominant observation posts and defiles in order to discover the advance of the enemy from afar and thus gain information of the enemy's strength in time for it to be of use. The mountainous terrain enables these detachments to effect greater delay than in normal terrain.

The interior guard of all camps and bivouacs is arranged with special care. Enemy detachments may infiltrate through security dispositions in areas which are difficult to guard and succeed in making deep incursions into a bivouac area.

OFFENSIVE COMBAT

■ 915. In *attack*, action of the force as a whole usually will be frontal with its several tactical groups operating in adjacent terrain compartments or corridors, all of which lead to the objective. Tactical groups fight under the almost complete discretion of their respective commanders. Their

operations are aimed at defiles in their zones of advance which either are objectives in themselves or which must be passed in reaching assigned objectives. The successful forcing of one defile usually will open the way for flanking action against other defiles, thereby forcing the enemy to abandon his position and at the same time blocking his withdrawal and retreat. (For attack of defiles, see section VIII.)

In difficult mountain terrain, the reinforced battalion is ordinarily the largest unit which can be employed as a unit in the attack.

■ 916. Because of the importance of lines of communication, *objectives* are usually terrain features such as passes or heights which control hostile lines of communication or from which the enemy can dominate friendly lines of communication by observation and fire.

■ 917. The commander influences the action by deciding at the outset where he intends making the *main attack*. Usually it will be in the terrain compartment which offers the best opportunities for flanking action by small units, effective supporting fires, and the most advantageous approach to a decisive objective. Tactical groups in adjacent terrain compartments make secondary attacks or feints. The commander disposes his reserves primarily to favor reinforcement of the main attack. When the terrain permits, reserves are so located as to be able also to exploit the success of secondary attacks.

■ 918. *Surprise* is facilitated by the exceptional defilade and dead space which the mountains afford and which frequently permit a debouchment at a short distance from the enemy. Surprise is completed by action of small detachments operating in areas which are difficult of travel and appearing on the flanks or in rear of the hostile position. The possibilities of transporting troops by air for this purpose may often be exploited.

■ 919. *Boundaries* between tactical groups lie as a rule along crests which delimit terrain corridors or compartments in which separate tactical groups are operating. Boundaries, however, are not strict delimiting lines of zones of action. The unit first arriving at an important point near a boundary should capture it.

■ 920. Within its terrain compartment, each tactical group makes its *main effort* along the crests and slopes or by a combined advance along heights and valleys. It is particularly important that early possession of the heights on each side of the defile assure protection to troops operating within the defile.

Infantry units advance by bounds, employing infiltration and enveloping action. They seek to outflank and capture hostile strong points on successive spurs and ridges. Supporting weapons of both infantry and artillery direct their fire to neutralize the enemy's observation and strong points.

Artillery with each tactical group furnishes close support.

Bombardment aviation complements artillery by assisting it in counterbattery missions and by bombing hostile reserves and supply installations.

■ 921. The *flanks* of tactical groups are protected by terrain obstacles supplemented by the action of detachments acting either as flank guards or as liaison detachments with adjacent combat teams.

■ 922. In addition to the possibilities of surprise which they offer, *night attacks* present special advantages. They avoid losses which would be incurred by attacks in daylight across ground that is slow and difficult for the advance with insufficient supporting fires and carried out under observed fires of the defense. The sharpness of relief lines facilitates maintenance of direction in the night attack. (See sec. III.)

■ 923. The success of each tactical group is exploited to the utmost by *pursuit*. When the location of the reserves and the terrain permit, it is reinforced. It pushes rapidly and deeply in the designated direction and initiates lateral movement against hostile forces which are holding up adjacent tactical groups whenever conformation of the terrain offers access to adjacent terrain compartments. It is this lateral action against the lines of communication of the enemy in adjacent terrain compartments which will cause withdrawal of the enemy to become general and change the action from exploitation of a local success by one tactical group to a pursuit by the whole force.

In addition to direct pressure exerted on the withdrawing enemy, every effort is made to delay his retreat by bombard-

ment aviation and to block him by the action of encircling forces to secure terrain objectives which bar the hostile avenues of retreat. Encircling maneuvers may be difficult to organize because of lack of mobility. However, small detachments of foot troops relieved of all excess equipment may be used; at times small detachments of cavalry may be able to effect the encircling maneuver. In deep snow, ski troops may be effectively employed. Key terrain features on the enemy's route of withdrawal may be suitable objectives for troops transported by air.

DEFENSIVE OPERATIONS

■ 924. In *defensive operations*, dispositions are based on the mission, on the routes of advance open to the enemy, and on the possibilities offered by a combination of difficult terrain and fire effect for breaking up the hostile attack.

The defense seeks to retain heights which dominate, by observation and fire, hostile routes of communication and approach. It also seeks to deny the enemy access to passes or other defiles which, if lost, will render defended heights untenable.

■ 925. *Defensive positions* usually comprise a combination of heights and defiles. In defending heights, positions forward of crests are difficult to screen from hostile observation. Steepness of the slopes and the defilade caused by sharp relief may make the establishment of bands of fire with flat-trajectory weapons impossible. On the other hand, positions on forward slopes lend themselves to long-range barrage and interdiction fires by flat-trajectory weapons and for a long-range observation system. Reverse slopes often fail to afford adequate fields of fire for automatic weapons. An assault on a reverse slope position by an enemy organized at close range in front of the crest may be expected. It often is possible to combine the advantages of forward slopes, crests, and reverse slopes. If the forward slope is too steep, the depth of the position may be increased by utilizing spurs extending toward the front to establish advanced elements of the position which are capable of flanking fires. At times two successive crests can be included in the position.

In defending passes or defiles the defense attempts to support its flanks on impassable obstacles on adjacent heights.

It takes full advantage of observation from the slopes of these heights, and pushes the flanks of the position forward on them in order to gain reciprocal flanking fires in front of the position. For other methods applicable to the defense of defiles, see section VIII.

■ 926. *Demolitions* and *chemical agents* assume increased importance to the defense. In favorable terrain such as passes and other defiles, contaminated demolitions are capable of blocking the advance of all arms except infantry detachments without vehicles. Their effect may endure for long periods of time.

■ 927. The *outpost* of a defensive position usually has good routes of withdrawal which unmask fires from the battle position. Security elements are pushed out in front of the outpost position with the missions of gaining contact with the enemy at the greatest possible distance and of gathering information which will assist the commander in disposing the elements of his command, particularly in locating his reserves advantageously.

It is important to delay the enemy as far in front of the position as possible. The more difficult the prospect of the defense of the battle position, the more important becomes this delay.

■ 928. The main line of resistance will include sectors which may be considered as almost impregnable due to difficulties of approach combined with a continuous system of fires, and sectors which are more vulnerable to attack due to the difficulty of covering them with a continuous system of fires. Extreme care must be exercised in concluding that certain terrain is impassable for the attacker since areas that actually are impassable for specialized detachments are rare. The dispositions should achieve continuity of fires across the entire width of sectors which so permit, and at least continuous surveillance over those sectors in which dead spaces render a continuous system of fire impracticable. Organization in depth is designed to prevent any deep penetration of the more vulnerable sectors.

The limited road net imposes rigidity on defensive dispositions. Once made, they are difficult to change and their proper determination constitutes one of the basic decisions of the commander.

Ambushes and a complete system of protected road blocks should form an integral part of the defense.

Reserves are held close to main routes of lateral and axial communication.

■ 929. The battle position consists of defense areas organized for all-around defense and occupying important terrain features. Gaps between adjacent defense areas are closed by connecting groups strong in automatic weapons and are covered by other defense areas on dominating terrain in rear.

■ 930. The distant observation available to the defense offers opportunities for long-range interdiction fires by both artillery and other supporting weapons. Such fires complement planned demolitions and must be coordinated with them.

Counterpreparation fires may be applied in mountains with unusual effect since careful study of the terrain will indicate almost conclusively areas in which the enemy will form for attack.

Bombardment aviation is particularly effective in preventing or delaying the maneuver of hostile reserves, particularly in their passage of defiles.

■ 931. From the beginning of the action, the defense must plan to maintain the integrity of its position by local counterattacks in case the enemy penetrates between adjacent defense areas. These counterattacks are prearranged as to direction, objective, and supporting fire so that they can be launched on short notice when the enemy is exhausted and spent in his attack. Because of the local nature of combat, a general counterattack is seldom possible. The reserves will ordinarily be held well forward.

■ 932. The rear areas of a defensive position may be subjected to harassing attacks by specialized enemy detachments able to traverse terrain which is impracticable for larger forces, or by troops transported by air. Protection from such attacks is afforded by placing security elements in positions which command areas in which hostile approach is at all probable. The security elements charged with this duty should consist of light detachments able not only to drive off the hostile forces but to pursue them and cut off their retreat.

■ 933. In *delaying action* the usual operation is to slow down the enemy by maintaining on high ground elements which threaten by fire any hostile movement along the valleys. This is combined with a series of resistances in defiles with special emphasis on blocking passes between valleys.

■ 934. The commander prescribes axes of withdrawal for tactical groups and successive positions which they are to reach as well as times of arrival on each.

The breaking off of combat by small units is facilitated by sharp relief which affords them dead space from hostile fire.

Engineer and chemical units are utilized to effect delay by demolitions and by chemicals in areas which have been coordinated with interdiction fires of artillery.

SECTION VII

COMBAT IN SNOW AND EXTREME COLD

GENERAL

■ 935. Military operations conducted under conditions of extreme cold and deep snow demand special equipment, and, preferably, special organization and training for troops designated for such operations. Severe weather conditions handicap movement and require special tactical and logistical measures for successful operation.

■ 936. The role of *infantry* remains unchanged. Movement in deep snow is difficult and slow unless special equipment has been provided and units thoroughly trained in its use.

Foot troops trained in the use of skis, snowshoes, and other special equipment can operate under conditions which immobilize other troops. In deep snow, the movement of mounted and motorized units is very difficult. For operations to be conducted during extreme winter weather, the infantry component of the force should be large.

The infantry units are organized into light self-sustained combat teams from which all weapons and equipment, unsuited to the operation, have been removed.

■ 937. *Ski troops* are especially equipped and trained for operations on skis in deep snow. Ski troops are especially well suited for use as patrols or as raiding parties against the hostile flanks, rear, and lines of communication. In

extensive winter operations, large bodies of ski troops may operate as a major force. Armament is adapted to the operations to be undertaken. In general, armament includes rifles, bayonets, a large proportion of light automatic weapons, pistols, hand grenades, and material for destroying trains and mechanized vehicles. Heavy weapons transported on sleds may be included, but when high mobility is essential these weapons usually are undesirable.

■ 938. *Horse cavalry* can be effectively employed in cold climates with little snow. Deep snow will impair its mobility.

■ 939. *Mechanized units* move across country with facility when the ground is thoroughly frozen and there is little snow. Streams and other bodies of water present no barrier when frozen to a sufficient thickness to carry the weight of vehicles. Vehicles of the track-laying type can operate in snow which is packed sufficiently to provide traction. For the successful operation of motor powered vehicles in extreme cold special equipment for starting and operating engines must be provided.

■ 940. Extreme cold affects both ballistics and matériel of *field artillery*. Snow affects mobility. It may be necessary to replace trucks by tractors, and to place matériel on runners. Horse-drawn and pack artillery are suitable in cold climates with little snow.

■ 941. In general, the role of *coastal batteries* remains unchanged. Unusual ballistic corrections may be necessary. Certain coast defense weapons are extremely effective against enemy troops advancing on ice.

Since the operations of ground troops, not specially equipped, are restricted in heavy snow to cleared roads, targets for attacks by enemy aircraft are frequently presented. The employment of all effective *antiaircraft* measures is therefore strongly indicated.

■ 942. The missions of the *Air Corps* under conditions of snow and extreme cold remain unchanged. Complete and accurate meteorological data are more necessary in air operations. Consequently in sparsely settled areas special measures may be required to augment the regularly established weather reporting service.

In many situations, detached forces can be established or reinforced by *troops transported by air*, and essential supplies, such as food, ammunition, and gasoline, can be delivered to ground troops by *air transport*.

■ 943. The principal mission of *engineers* is the maintenance of open lines of communication. Engineers may be augmented by additional enlisted men or by civilian labor, and by special snow removing equipment. Organization for this task approximates that of any well organized highway department. Engineers may be called upon to assist in the construction of trenches in frozen ground where the use of explosives is required.

■ 944. Full use is made of existing commercial *signal* installations. Radio is extremely important and the number of sets is increased. In deep snow, messenger service is by ski messenger or by sled. Shelter for operators and equipment is essential.

■ 945. *Chemical agents* which are liquid or which vaporize at low temperatures will be useful in operations of this character. Screening smokes are relatively unaffected by temperature. Agents disseminated by means of thermal generators are unaffected by temperature.

■ 946. When planning tactical operations for execution during rigorous winter weather, careful consideration must be given to the probable effects of weather upon operations, health of troops, supply, evacuation, and maintenance of signal communication. Ice, deep snow, and extreme cold modify the normal utilization of terrain features, and present unusual problems which must be solved to insure success without unnecessary casualties. Provision must be made, in particular, for the supply of warm clothing and bedding, of special types suitable to the requirements imposed by the climate. Provision must be made for hot meals and for an adequate supply of water.

CONDUCT OF OPERATIONS

■ 947. In deep snow and extreme cold distant *reconnaissance* is performed by air units and is subject to the conditions imposed by bad weather and short periods of daylight. In deep snow, close reconnaissance is best performed by ski

patrols. When the terrain is favorable, this reconnaissance can be deepened by the use of motorized sleds which are employed either independently of or in conjunction with ski patrols. Mechanized and motorized units and horse cavalry are effective when the ground is frozen and there is little snow.

■ 948. *Marches* in snow and extreme cold are executed on foot, mounted on horses, on skis, on snowshoes, by motor transport, or by a combination of these methods. With the exception of ski troops, the distance covered ordinarily will be less than that expected under more favorable climatic conditions.

■ 949. The principal problem for foot or mounted troops in snow is that of breaking the trail. Troops marching in front are relieved frequently. The trail may be broken by men on skis, by horse-drawn sleds, by tractors, by tanks, by snow plows, or by horse cavalry.

■ 950. If 1 foot, or more, of suitable snow is present, trained skiers, in open terrain, are the most mobile troops. The rate, depending on the slope of the ground, varies from about $1\frac{1}{2}$ to $3\frac{1}{2}$ miles an hour. For short distances with trained men it will reach 6 miles an hour. Under unfavorable conditions, skiing is very exhausting and the usual system of halts will not apply. The number and length of halts must be determined by the conditions encountered.

■ 951. The rate of movement on snowshoes varies from $1\frac{1}{2}$ miles to $2\frac{1}{2}$ miles per hour. Marches over considerable distances can be performed only by men trained and accustomed to the use of snowshoes.

■ 952. The possibility of movement by motor transport is dependent on the depth of snow. In 3 inches or less, motor transport without special equipment can move at reduced speeds. In snow up to 18 inches deep, motor transport can move if equipped with chains, and leading trucks equipped with lugs. In snow over 18 inches deep, a snow plow is necessary. When shuttling is contemplated, adequate provision is made for cleared turn-arounds. Tractors and half-track vehicles will experience little difficulty in any snow that is sufficiently packed to give traction. Motorcycles are of little value in any snow.

■ 953. *Security* is facilitated by the limitations which snow and ice impose upon the movement of large enemy forces. Unfavorable weather may limit air and ground observation of the enemy, but require special security measures against raids by ski troops.

■ 954. Where snow impedes movement, security forces of troops on the march ordinarily consist of ski detachments, operating as patrols.

■ 955. Security at a halt is affected by the fact that enemy movements in heavy snow, except for units on skis, are limited to roads. This indicates the need for strong detachments posted on roads, with the areas between them covered by dismounted or ski patrols. The tour of duty of sentinels, under severe conditions, may be for periods as short as 20 minutes.

■ 956. Enemy air operations may be somewhat restricted by short hours of daylight and by storms. Dense forests provide an effective screen against hostile air observation for elements not utilizing roads or beaten trails. In open snow-covered areas protection against observation is increased by the use of a white covering for clothing and equipment. Since weather conditions may limit the altitude of bombers and since the movement of large caliber guns is often difficult, the extensive use of light automatic weapons in antiaircraft defense is indicated.

■ 957. Two important factors affect measures for *antimechanized* security. First, extreme cold decreases the importance of water obstacles. However, concentrated artillery fire, air bombing, or deliberately placed demolition charges may make them either an obstacle or a trap or both. One foot of solid ice will carry light tanks and 3 or 4 feet will carry any load that can be moved by an army. Second, snow over 18 inches deep will limit or completely stop the use of wheeled combat vehicles except on cleared roads, and will hamper the operation of track vehicles.

In snow, antitank guns should preferably be mounted on runners and drawn by light tractors.

Snow trenches, revetted on the near side, are effective obstacles when frozen. On roads in hilly country, heavy boulders are effective.

Mines, unless they are properly placed, are relatively ineffective in heavy snow as the tank will press them deeper into the snow without exploding them. If used, they should be placed on a hard surface.

Attack of a tank by means of gasoline, either in bottles or in hand grenades may sometimes be ineffective in very cold weather, due to low volatility of the gasoline. If used, bottles should be thrown at both the top and bottom of the tank.

■ 958. Many chemical agents which are effective at normal temperatures are not effective in extreme cold. This is particularly true of persistent agents. However, protective measures must not be neglected.

■ 959. *Offensive operations* require special preparations, proportionate to the strength of the command and the climatic conditions. Signal communications, supply, and evacuation become increasingly difficult as the attack progresses. Careful planning and detailed preparations are essential in order to insure that the attack does not fail through lack of adequate command and administrative arrangements.

When formulating plans, the possibility of sudden weather changes must be considered and plans made to meet the difficulties imposed by such changes. Additional heavy snow may fall during the operation, thus further restricting movement and mobility. A sudden thaw may prevent cross country movement or cause troops to become cut off from adjacent friendly forces. Fogs may develop quickly, and low clouds may obscure observation. Special arrangements are made for the compilation of frequent weather reports. The plan of operations having been decided upon, it is executed promptly, being adapted to changes in weather as they occur.

■ 960. An *envelopment* by a properly equipped force offers many prospects of success. Deep snow will hinder the movement of hostile reserves, other than ski troops, to meet the envelopment.

■ 961. If practicable, the main attack is made over ground free of heavy forests and snow drifts. Terrain corridors lying between wooded areas usually are preferable to stream valleys which ordinarily contain deep drifts.

■ 962. The objectives of the attack are the critical terrain features which dominate the roads leading from the hostile

position. Seizure of such features will prevent withdrawal, reinforcement, or resupply, and will result in the eventual surrender or annihilation of the enemy.

■ 963. *Combat aviation* is employed in direct support of ground troops during the attack. Its actions are closely coordinated with the plan of attack of the ground forces. It attacks hostile troops in the open or under light shelter, reserves, artillery in position, command post installations, and troops and vehicles moving on roads within or in close proximity to the battlefield.

■ 964. The use of *mechanized forces* in the attack is dependent upon favorable terrain, which must be free of heavy forests and deep snowdrifts. When snow has drifted, hollows and depressions are avoided and the attack pushed on those ridges which are relatively free from snow.

■ 965. Because of slowness of movement *reserves* are located initially close to the probable scene of future employment. When the ground is covered by snow, the reserve should contain a large proportion of ski troops, infantry supporting weapons on sleds, and full-track or half-track type motor transport.

■ 966. In a *pursuit* in snow, ski troops, infantry transported in track-laying type vehicles, and artillery equipped with full-track or half-track type prime movers, if available, are assigned to the encircling force. Parachute or other troops transported by air are landed near defiles with the mission of blocking the retreat of the enemy by demolitions and other obstacles.

■ 967. In a *defensive* conducted in snow, every effort is made to delay the progress of hostile preparations and dispositions. By this means the defender endeavors to gain such time as is required under the conditions of terrain, snow, and weather, to readjust his dispositions for meeting the attack.

Light bombardment aviation and the fire of long-range artillery, are employed against hostile columns and transport, and troops in assembly positions. The most mobile troops and weapons are used to delay the hostile advance and development, remaining on this duty until forced to retire within the position. Ski troops are well suited for

this purpose. They are equipped with a large proportion of automatic weapons, and are supported by infantry heavy weapons and pack artillery transported on sleds or special vehicles.

■ 968. Deep snow may favor the defense due to the difficulty of movement by the attacking forces and the fact that an immobile force in deep snow can be hidden. Excellent fields of fire are provided over frozen wide streams and lakes which afford little or no cover to the attacker. Keeping the ice broken up for a distance of 20 to 30 feet from the shore will form a difficult obstacle.

■ 969. Open areas which are relatively free of snow, and heavy wooded areas favor the attacker, and are defended in strength and depth. Troops are more lightly disposed when an area has a foreground covered by deep snowdrifts. Anti-tank weapons are disposed in depth to cover those approaches which have the least snow.

■ 970. Ordinary entrenching tools are ineffective and the organization of a position requires special tools and explosives. The location of a defensive position on the military crest will usually be effective, as both enemy personnel and tanks have difficulty in ascending a steep slope covered with snow. When the ground cannot be excavated, or when necessary to obtain sufficient command for firing, snow trenches are used. At least 5 feet of solidly packed snow is needed for protection from small-arms fire. When a prepared position is garrisoned, it will require heated shelters.

■ 971. The most mobile troops of the defender are held in *reserve*. Because of difficulties of movement, reserves are held close to the probable scene of employment. As in any defense, the integrity of the position is maintained by counterattacks launched against the flank of any force which has succeeded in gaining a foothold within the position. In deep snow, the enemy may be unable to change his dispositions in sufficient time to meet a counterattack directed at his flank, especially when ski troops or troops equipped with snowshoes are employed in the counterattack.

■ 972. The defender utilizes every opportunity to improve routes of communication within the position. Paths are opened in snow between elements occupying front-line posi-

tions, between rear areas and front-line installations, and in the most probable directions of employment of reserves. Automatic weapons of reserve units are sited to cover these thoroughfares when not otherwise required, in order to prevent unexpected use by the enemy.

■ 973. The bulk of the forces employed in *delaying action* are ski troops, and foot troops transported in vehicles which can operate on snow-covered roads. Troops engaged in delaying action in snow are reinforced by artillery and infantry heavy weapons adapted for movement over snow. Engineers are employed effectively in creating demolitions and other obstacles to the enemy's advance. When the depth of snow is not excessive, every effort is made to impede the movement of hostile mechanized and motorized units which will endeavor to strike at the flanks and in rear of the delaying force.

SECTION VIII

COMBAT AT DEFILES

■ 974. Any terrain feature which restricts the front of advance of a force is a defile for that force. Mountain passes are a common form of defile. Defiles frequently occur in woods, towns, river crossings, lake regions, and swampy areas.

Because of their nature, defiles are comparatively easy to defend and difficult to attack.

■ 975. A defense in front of a defile, in the direction of the enemy, is employed by advance forces to permit the main body to debouch from the defile unmolested and to secure sufficient space for its deployment. Offensive action may be required to secure sufficient space. The minimum distance from the exit at which the defense is conducted depends on the range of the hostile artillery and the size of the main body. The defense may be conducted in a single position with flanks refused and protected by the obstacles creating the defile or the defender may adopt delaying action to gain the necessary time and space for the debouchment of the main body. Delaying action is particularly effective when opposed by an enemy of lesser mobility.

A defense in front of a defile is often required of a rear guard to cover the retirement of the main body through a defile.

■ 976. A defile may sometimes be defended at points *within*. The terrain within the defile restricts the front and the maneuver of both defender and attacker. Such a defense can be employed advantageously by small forces only when the flanks are secure, or when the defender's mission is solely one of obtaining limited delay.

In mountainous terrain, maximum use is made of demolitions, obstacles, and chemicals within the defile to delay the hostile advance. The enemy is extremely vulnerable to air attack while within the defile; maximum use is made of available bombardment aviation.

A position is occupied across the valley with flanks resting on the high ground. Reserves are held close to the position. Counterattacks are launched from the high ground against the attacker's flanks and rear.

A defense within the defile is often used in conjunction with a defense in rear of the defile to give depth to a determined defense.

■ 977. Defense *in rear* of a defile provides maneuver area to the defender while it closes the exit and restricts maneuver of the attacker. The defensive position is concave towards the exit with flanks resting on obstacles. The distance of the position from the exit is such that converging fire of all arms can be brought upon the attacker before and during his debouchment. Reserves are held out to give flexibility to the defense and to counterattack promptly against enemy forces which succeed in emerging from the defile. The maximum delay and disorganization of the enemy is effected within the defile by the use of covering forces, demolitions, obstructions, chemicals, and air attack.

■ 978. The manner of *forcing a defile* depends largely upon the manner in which it is held and the accessibility of the flanks. When a defile is held at or within the entrance and the flanks are accessible, the main attack is made in a direction that insures the capture of localities which command the entrance. When the flanks are inaccessible, the attack is made by penetration. When the defile is held at the exit, the attacker attempts to outflank the defense. By moving small forces through or around the obstacles creating the defile, the advance is made on a broad front to outflank de-

fended areas. The attacker debouches from the defile on the widest possible front.

SECTION IX

JUNGLE OPERATIONS

■ 979. The difficulties inherent to operations in wooded terrain (sec. V) are greatly magnified in jungle warfare. It has many of the characteristics of night combat. Movements are restricted. There are few roads or trails available; often trails must be slashed as movement progresses. Direction is hard to maintain. Control and maneuver are difficult. Ground observation is limited to short distances, sometimes to only a few feet. Air observation is extremely difficult.

To the difficulties characteristic of operations in wooded terrain are added the handicaps which attend operations in tropical climates; heat, heavy rains, insects, and unhealthful conditions.

Difficulties are in proportion to the size of the command. Good discipline and bold and determined leadership rather than numbers are essential to successful operations.

■ 980. Jungle warfare is characterized by close fighting. Artillery and other supporting weapons have only limited application. The grenade, submachine gun, semiautomatic rifle, bayonet and machete are the weapons best suited to operations in the jungle.

Jungle fighting is performed largely by infantry. The country is often too thick for the movement of vehicles. Pack transport is essential. Lack of observation limits the use of artillery. The pack howitzer is an appropriate artillery weapon but difficulties of transport limit the amount of artillery and ammunition which can accompany the columns. Combat aviation is of particular value as a supporting arm. Light bombardment aviation is used to compensate for lack of artillery. Troops transported by air may be employed when suitable landing areas are available.

Self-containment of supply in keeping with the proposed operations is necessary. The nature of jungle warfare is such that lines of communication often are vulnerable to attack. The use of air transport and parachutes for supply often will relieve the force from dissipating its efforts to guard long lines of communication.

All troops must be thoroughly acclimated before initiating major operations. The unhealthful conditions present necessitate medical personnel especially trained and equipped for tropical service.

■ 981. During the rainy season maneuver in the jungle is extremely limited, and often is impossible. Troops are bound to the roads and trails except for local actions. During the dry season, movement off trails is possible by cutting trails, by utilizing open areas and dry or partially dry stream beds.

Opening trails may be facilitated by having each unit *improve* the trail as it advances. By this method the leading cutters of the column break the trail; succeeding cutters widen and improve it. Speed and relief are gained by frequent rotation of cutters within each small unit.

■ 982. Jungle areas favor surprise and ambush by small forces. Small patrols conduct ground reconnaissance. Mounted detachments may be particularly effective. Distances at which security and reconnaissance detachments operate are decreased in proportion to the thickness of the jungle. Aviation supplements and extends the reconnaissance of ground elements. Even in close jungle terrain, air observers searching carefully at low altitudes will often be able to procure valuable information of enemy forces. Against an untrained enemy, air observation will be especially effective.

■ 983. On the march, ambush is a constant threat. Distances between elements of the force should be much less than in open country and special measures are taken to maintain contact between elements. At halts, flanks are protected by small flank detachments a short distance from the columns. Aviation is constantly on watch to detect indications of ambush.

A bivouac area must be prepared for an all around defense with suitable fields of fire. Elements of the outpost are stationed on all roads, trails leading to the bivouac area, and stream beds.

■ 984. Signal communication is extremely difficult. Visual signaling is often impossible, the use of runners slow and often hazardous, the range of radio sets may be greatly reduced, and wire circuits difficult to install and maintain.

When clearings are available, drop and pickup messages are a highly satisfactory means of signal communication. (See FM 31-20.)

SECTION X

DESERT OPERATIONS

■ 985. The character of deserts varies greatly. The surface may consist of loose sand and sand dunes, over which the marching of men and animals is difficult and the movement of motor vehicles is greatly impeded, or may have a hard surface which permits the movement of mechanical transport.

There are seldom any well-defined roads but trails generally exist between water sources. Hard desert is often passable anywhere by motor transport at considerable speed. Half-track vehicles are especially efficient. Stretches of loose or heavy sand may be made passable by the use of wire netting, canvas strips or similar means. Heavy traction tires assist wheeled vehicles in crossing areas of loose or heavy sand.

There are few landmarks and maintenance of direction is often difficult. Mirage is a constant source of error. Distances are deceptive and usually are greatly underestimated.

■ 986. Desert warfare is characterized by the dependence of movement and operations on the location and quantity of water supplies. Operations generally are based on the capture and protection of vital water sources. Denial of water facilities to the enemy often will bring about an early, successful outcome to the campaign.

When water supplies are inadequate, water must be brought from the rear by tank truck, rail, or pipe line, necessitating protection of this line of communication.

■ 987. A high degree of mobility is desirable in the forces employed. When the character of the desert permits, the speed, firepower, and comparative independence of water supply of motorized and mechanized forces make them especially useful. The number of animals in the force is held to the minimum on account of the large amount of water they require. Motorized units, mechanized units, or troops transported by air are employed to hold points of tactical importance such as water sources. When motor transport is impracticable horse or camel cavalry may be used, though the water problem will

be acute. Air operations are very effective in desert operations since concealment from air observation is difficult. Air transport is especially useful for the supply of isolated detachments. The troops employed must be thoroughly acclimated before engaging in desert operations.

■ 988. The general doctrines governing offensive and defensive operations apply in desert operations against a well-trained army. The tactics of small enemy forces accustomed to desert warfare are likely to be those of harassing the flanks and rear of columns, attempts to cut off detached parties, and attacks on poorly protected bivouacs. Such an enemy usually attempts to avoid a general engagement. By denying him water facilities, usually he can be pinned to the ground and engaged in decisive combat.

■ 989. Desert terrain is often very advantageous for a wide encircling or turning movement by highly mobile mechanized forces, in cooperation with combat aviation. Such action may prove decisive.

SECTION XI

PARTISAN WARFARE

GENERAL

■ 990. *Partisan warfare* is carried on by small independent or semi-independent forces, operating against a greatly superior enemy. The partisan operations are conducted for the purpose of harassing or delaying larger forces, causing losses through attrition, destroying signal communication, or making incursions on the enemy's lines of communication and supply.

Partisan operations may result as an aftermath of the defeat of the main forces of modern armed opponents. They may result from the intention to occupy territory or quell rebellions of semicivilized peoples. The military geography of the area may require operations in mountains, deserts, jungles, or undeveloped terrain. Special arms, equipment, and methods of operations may be necessary. The situation in each instance must be studied critically to determine the appropriate preparations and methods necessary for the conduct of successful operations.

■ 991. In *planning* partisan operations against a superior force, good information of the enemy's dispositions and movements and a thorough knowledge of the terrain and road net are needed. Large scale operations are avoided. Tactics are based on a small force striking a quick blow with surprise against isolated detachments and unprotected columns or convoys. Raiding parties operating against the enemy's rear carry supplies and equipment essential for an absence of several days.

The plan of the commander provides for assembling the bulk of the command after each enterprise to prevent its dispersion and to insure proper direction in the conduct of subsequent operations.

■ 992. In the *conduct* of partisan warfare the mobility, enterprise, and reliability of the troops employed are more important than their numerical strength. In general, the best results are obtained by the employment of numerous small detachments under capable and versatile subordinate leaders, all operating under the direction of an experienced superior commander.

An active counterreconnaissance defeats the enemy's reconnaissance detachments. His main body is harassed and held in suspense by repeated threats and raids. Whenever practicable, movements and attacks are made at night. During daylight hours, the main forces remain concealed, leaving only reconnaissance patrols in contact with the enemy.

By feint and demonstration, by changing methods of combat, and by spreading false information, the enemy is misled and conditions favoring surprise are created.

Use is made of obstacles to delay the enemy in front while attacking him in flank and rear. Raiding parties operating in the enemy's rear may seriously interrupt the enemy's system of supply by destroying bridges and attacking supply trains. Every effort is made to keep in communication with these raiding parties so that their subsequent activities may be properly directed.

Passive measures, operations at night, and dispersion counteract hostile air and mechanized operations.

■ 993. *Larger forces* engaged in the suppression of partisan warfare have superior organization, armament, and equipment but may be handicapped by lack of reliable information,

by dependence on an organized system of supply, and by difficulty in bringing the enemy to a decisive engagement.

■ 994. When the objective of the operations is the destruction of partisan forces or the quelling of tribal uprisings, vigorous and bold action by mobile forces is ordinarily the quickest and surest way of defeating the enemy bands. Usually, this can be accomplished best by an advance on a broad front along all available routes within the affected area against the enemy's principal villages and strongholds. These are then organized as defensive areas from which highly mobile columns conduct operations against any organized resistance located. Since the attacker is usually greatly superior in strength and means of combat, encirclement by double envelopment should be attempted in order to bring about a decisive result.

■ 995. When the objective of the operations is the occupation of the hostile territory, concerted action directed against the capital, the government, the main lines of communication, and main sources of supply is the quickest method of bringing about decisive battles and overthrowing the enemy.

Undue dispersion of force by using numerous minor detached forces may lead to defeat in detail.

Vigorous *air attacks* conducted in front and on the flanks of operations directed toward vital objectives prevent hostile concentrations that would slow up or divert the main forces. In addition to their material effects, air attacks weaken morale and the will to resist of both the armed forces and the civilian population.

CHAPTER 13

TROOPS TRANSPORTED BY AIR

GENERAL

■ 996. *Parachute troops* are troops moved by air transport and landed by means of parachutes. The principal tactical unit for parachute troops is the battalion. It consists of two or more combat companies and other units required by the mission and operation.

■ 997. *Weapons and equipment* of parachute troops include the rifle or carbine, automatic pistol, submachine gun, light machine gun, 60-mm mortar, and hand grenade, together with signal and demolition equipment. Parachute troops are armed and equipped for the execution of a specific task. Weapons and equipment not carried by the individual during the descent are dropped in containers on the landing area simultaneously with the parachutists.

■ 998. Ordinarily, parachute troops may be considered as the *advance guard element* of air landing troops or other military or naval forces. They constitute a powerful surprise factor and usually are employed in conjunction with air landing or mechanized troops in the path of the main ground effort, or close in rear of the enemy front line; otherwise they may be quickly surrounded and destroyed.

■ 999. *Air landing troops* are troops moved by powered aircraft who disembark after the aircraft reaches the ground. They are task forces organized as to personnel and equipment and trained for the execution of particular missions. They execute special missions in areas which are inaccessible, or not immediately accessible to other friendly troops. Their organization would include a headquarters, infantry, and essential units of other arms in suitable proportion. In each component the unity of tactical organization should be preserved as far as practicable. Parachute troops are attached to air landing troops for operations in hostile territory when it is necessary to seize, hold, and protect landing areas for air landing troops.

■ 1000. *Combined operations* of parachute and air landing troops are similar to the advance guard action of a large command; to the execution of a reconnaissance in force; or to a major raid against the enemy. Excluding the minor operations of parachute troops on sabotage and special missions, air landing operations are executed usually in conjunction with other ground or naval operations.

■ 1001. *Air superiority* in the locality of the operation is a fundamental requisite to successful air landing operations. Except when employed in small numbers and on missions requiring strict secrecy, air landing operations must be closely supported by combat aviation prior to, during, and after landing in hostile territory.

■ 1002. Except in extreme cases when used on sacrifice missions, troops transported by air should not be employed unless they can be supported quickly by other military or naval forces, or unless they can be withdrawn after their mission has been accomplished.

MISSIONS

■ 1003. Suitable missions for troops transported by air include:

a. Seizing and holding, or otherwise exploiting, important tactical localities or installations, in conjunction with or pending the arrival of other military or naval forces. Such missions include seizure and clearance of landing fields, beachheads, strong points, and ports; seizure of essential observation or other critical terrain; severing hostile lines of communication and supply; the destruction of bridges, locks, public utility enterprises, and other designated demolitions; seizure of river crossings, defiles, and other bottlenecks; blocking a hostile counterattack; interrupting the movements of hostile reserves; cooperating in the pursuit or breakthrough by ground forces by operating against enemy reserves and lines of communication, and blocking hostile avenues of retreat; and preventing the enemy from destroying essential installations, supplies, and matériel which might be of use in our own subsequent operations.

b. Executing an envelopment from the air in conjunction with an attack by ground forces.

c. Execution of surprise attacks as a diversion or feint in connection with other air landing or ground operations, or to create confusion and disorder among the hostile military and civilian personnel.

d. Execution of an attack against an isolated enemy position, impossible or impracticable of attack by ground forces.

■ 1004. The missions of parachute and air landing troops are facilitated under the following conditions: when the enemy air force is inferior or has been defeated; when landing in territory whose population may be expected to support the parachute troops with food, information, and transport; when landing in rear of a disorganized or defeated enemy; and when suitable terrain and good weather exist.

PLANNING OPERATIONS

■ 1005. In *planning* air landing operations, factors to be considered include the mission of the force; strength, disposition, and capabilities of the enemy to interfere with the operation; composition of own force; support to be furnished by combat aviation, and ground or naval forces; the effect of terrain; weather conditions; number, types, and capacities of transport planes available; time required for the movement; measures for coordinating the action of the combined forces engaged in the operation; movement of the command to the airdrome from which the operation is launched; troop and cargo loadings; sequence of deplanning; and supply and evacuation plan.

■ 1006. In planning the *organization* of a force for the execution of an assigned mission careful consideration must be given to the relative importance of the different arms. Certain missions require a relatively high percentage of infantry and artillery whereas other missions may require a preponderance of parachute troops, engineers and other special troops.

■ 1007. Excluding the use of parachute troops in small numbers for sabotage or special missions *any plan* for operations in hostile rear areas should provide for the following: local air superiority; close support by combat aviation en route, during, and after landing; the allotment of parachute troops in sufficient strength to assure the seizure of necessary landing areas and protection of the transport planes while landing;

an adequate infantry component. When facing a strong and unshaken enemy the landing must be quickly supported by advancing mechanized or other highly mobile ground units.

■ 1008. Plans must be based on accurate and detailed information. Every effort must be made to obtain detailed information of enemy activities in the combat area, including location, strength, armament, and capability of the hostile force to interfere with the operation; location of antiaircraft batteries and other defensive installations; composition and type of organized defenses of airdromes, landing fields, and other military or civil installations; morale of the civil population and its effectiveness as part of the defense force; location and type of obstacles used to obstruct possible landing areas; and the location of highly mobile hostile forces.

■ 1009. A comprehensive knowledge of the *terrain* is essential to the formulation of a detailed tactical plan for the operation. By studying maps and aerial photographs and by personal aerial reconnaissances of the combat area, landing and alternate landing sites are selected; towns, roads, and other key points definitely located; and the advantages and disadvantages of the terrain for the proposed operation carefully weighed.

■ 1010. The *weather* is an important factor in an air landing operation and must be studied carefully during the planning phase. Heavy fog, low clouds, and icing conditions have an adverse effect on flying. In addition, high winds interfere with accurate and safe landings of parachute troops. Therefore, a long range weather forecast should be studied and the operation scheduled, if practicable, so as to take advantage of favorable weather conditions.

■ 1011. The *tactical plan for parachute troops* should include provision for such matters as time of landing; support to be furnished by combat aviation; specific missions for the seizure and protection of the landing area including road blocking missions and control of local signal communications; antiaircraft and antitank defensive measure; seizure of transportation; contact with friendly espionage agencies; removal of obstacles from landing area; disposition of civilians; and plan for use of parachute troops when reinforced or relieved by air landing troops.

■ 1012. The *tactical plan for air landing troops* after landing in the hostile area should include provision for such matters as: time of landing; support to be furnished by combat aviation; missions for leading wave and subsequent waves; reinforcement of parachute troops; assembly positions; special signal communication instructions; location of command post; and similar matters. (For details of an air movement table, see FM 101-10.)

■ 1013. When an air landing force is operating in conjunction with ground forces and combat aviation, the air landing plan must be coordinated with the ground and air force plans. This coordination is best effected by personal conferences between commanders and staffs concerned. Each commander should have full knowledge of the general plan of operations; the forces involved; the missions of the ground force, the air force and the air landing force; objective of each force; time of attack and scheme of maneuver of ground forces; combat aviation support missions; signal communication arrangements between the forces; and other information necessary to assure coordinated action by the combined forces.

■ 1014. All preparations for an operation should be completed well in advance of the operation and, within the limits imposed by the necessity for secrecy, subordinate commanders should be given timely information of the details of the plan in order that units will have sufficient time to adjust equipment requirements, and complete special training.

As far as practicable, training and rehearsal for the operation should be conducted on terrain similar to that for which the actual operation is planned. *This includes joint training by the combined arms detailed to participate in the operation.*

■ 1015. The size and composition of the force assigned to a landing field is determined largely by the location and facilities of the field, the mission, the enemy situation, and the organization for combat. Each force is organized and equipped to execute a specific mission.

CONDUCT OF OPERATIONS

■ 1016. The *combined operations of parachute and air landing troops* are characterized primarily by the speed and sur-

prise with which these troops can execute an attack in hostile rear areas, or to intervene at critical areas in the theater of war.

■ 1017. It is not likely that higher commanders can exercise *direction or control* of air landing operations until after initial objectives have been seized or initial tasks executed. Each unit must be self-sustaining during the initial phase of combat. No support, except from combat aviation, can be expected before the landing of additional troops or until contact is made with other ground forces.

■ 1018. *The number of hostile landing areas* that are required for an air landing operation depends on the size and composition of the force, the mission, hostile defensive dispositions, and similar factors. Ordinarily, several landing fields are necessary for major operations. The use of several landing areas serves to deceive the enemy in that it causes him to disperse his defensive forces over a wide area, and conceals the place of landing of the bulk of the command.

■ 1019. Preliminary air attack directed against the prospective landing areas will ordinarily be required preceding the landing, to destroy or disorganize local defenses.

■ 1020. The time of starting *bombing missions* in support of an air landing operation depends largely on the mission of the force, the enemy air situation, defensive ground organization, and other factors which must be considered for each operation.

At an appropriate time preceding the launching of the air transport movement, bombardment aviation attacks enemy airdromes, planes on the ground, and other installations in the combat area. This is followed closely by bombing and machine-gun attacks against the local hostile defense force and against the defenses surrounding the landing areas to include hostile artillery within range of the landing area. During the landing, bombing operations seek to destroy enemy ground forces and defensive works, with particular attention to the attack of any motorized or mechanized units moving to the defense of the landing area. After the landing is effected, bombardment aviation furnishes close support for the ground operation in accordance with previously arranged plans or on call.

■ 1021. The *landing of parachute troops* should be timed to follow closely the bombardment operations against the defenses of the landing areas. Ordinarily, these troops are dropped around the perimeters of previously selected landing areas. Small fighting groups or units proceed to the execution of their initial tasks, which usually are the seizure and clearing of landing fields and the neutralization of local defenses. Other suitable missions for these troops include capture of important terrain features or buildings; road blocking; seizure of local signal communications; contact with friendly civilians and agents; covering the operations of other parachute troops; executing specified demolitions; and reconnaissance toward designated localities.

■ 1022. Air landing troops land shortly after the parachute troops in accordance with a time schedule coordinated with combat aviation and parachute troop operations or on a pre-arranged signal from the parachute troops on the ground. Thereafter, transport planes are landed on a time schedule which may be modified to conform to actual conditions on the ground.

Units operating from the several landing fields execute their assignments in accordance with a previously prepared plan, which should be flexible enough to allow commanders wide latitude in the conduct of the operation.

■ 1023. *Signal equipment* of parachute troops is limited to light and comparatively simple apparatus. Units down to and including the squad may be equipped with small, two-way radio sets, panels, and pyrotechnics. Signal equipment may also be procured or improvised locally.

Air landing troops modify their means and methods of signal communication to suit each local situation. On some missions long range radio sets and special pyrotechnic equipment may be required. Particular care should be taken to assure signal communication with supporting combat aviation by providing sufficient equipment for at least two different means.

COUNTERMEASURES

■ 1024. All unit commanders are responsible for the defense of their areas against parachute and air landing troops. Measures are taken to insure timely warning of the approach

of such troops by the establishment of air warning sentries or patrols and by cooperation with established military or civilian air warning services.

■ 1025. All troops stationed in an area cooperate in the defense against parachute and air landing troops by firing on descending parachutists and enemy aircraft within range. Hostile elements that land are attacked before they can effect a reorganization on the ground.

■ 1026. Troops engaged in tactical operations should be free of the responsibility of defending rear areas.

Special defense measures may be required. These include provision for the local defense of vital localities, a highly mobile reserve and an information and warning system carefully integrated with an adequate signal communication system.

■ 1027. *Local defense* involves dispersion; the detail of first-line troops for the purpose should be avoided. Troops capable of only limited service may be employed for the defense of industrial areas. Civilian law enforcement agencies, State guards, patriotic organizations, and industrial employees also may be trained in local defense.

■ 1028. The function of the *mobile reserve* is the attack and destruction of any enemy troops attempting or effecting a landing. The reserve should consist of thoroughly trained troops. It should be highly mobile. Speed is essential. It is desirable that its counterattack be delivered before the enemy has completely organized his forces after landing.

The composition of the reserve should be in accordance with its mission. The use of mechanized troops supported by light cannon is indicated both for mobility and because the enemy will necessarily be weak in these elements, unprotected by intrenchments and obstacles and vulnerable to their assault. Any additional troops should be motorized.

The position of the reserve is influenced by the location of the various areas it is to protect and the road net.

■ 1029. Thorough coordination is secured with the aircraft warning service and any other air defense measures organized in the area.

CHAPTER 14

AIR TASK FORCES

■ 1030. An *air task force* is a grouping of air, base, and service units formed to conduct the air missions required by a plan of operations.

The types of air missions required by the plan of operations determines the composition, strength, organization, and types of airplanes and other equipment of an air task force. Changes in the types of missions, or in the plan of operations, often dictate changes in the force, such as variations in the numbers and types of units composing it, and in the location of air bases. Organization must be flexible. There always should be available trained commanders and staffs in adequate numbers for all probable air task forces.

The air task force should contain the number and type of *reconnaissance*, *bombardment* and *pursuit*, *air transport* and *base* and *service units* essential for the successful accomplishment of the mission with which it is charged.

■ 1031. In general, airplanes of all combat types can be used within the limits of their range for reconnaissance, on missions against hostile air forces or vital elements of an enemy's national structure, for air attack of ground objectives, or in support of ground or naval operations. Pursuit aviation fights offensively in the air. Other combat aviation normally engages in air fighting only for its own protection in the execution of its primary missions.

Bombardment aviation is useful principally for air attack of surface objectives. Though pursuit aviation is useful primarily for air fighting, it can be used in emergency for air attack of such objectives as are vulnerable to light bombs, aircraft cannon, and machine guns. Pursuit is required to intercept and limit the operations of hostile bombers and other types of hostile aviation.

The size or surface of airdromes or landing fields may preclude the use of certain types of aircraft in the air task force.

■ 1032. In all air operations, the *weather* is of such importance that trained weather personnel must be with the force

to make accurate weather forecasts for the longest possible periods ahead. The time of initiating and conducting important operations is determined largely by these forecasts.

■ 1033. *Air superiority* in the area involved is prerequisite to continued, successful military operations. Greater numbers of airplanes, higher performance characteristics than corresponding hostile types, thorough training, high morale, intelligent employment and leadership, and superior base facilities tend to assure air superiority. Numerically inferior air forces possessing some of these factors may attain temporary or local air superiority.

■ 1034. To gain complete control of the air, hostile air forces must be destroyed, or neutralized by pinning them to the ground. The best method of accomplishing this result is air attack with bombs and aircraft gun fire against aircraft on the ground, air base facilities and installations, fuel reserves, bomb dumps and routes of communication; and against aircraft, engine, and equipment factories. Such attacks must be intensive, concentrated, and sustained. Detailed reconnaissance prior to and throughout the operations is essential. In many cases, protective measures by the enemy, such as concealment, dispersion, and antiaircraft defenses prevent complete neutralization, and hostile bombers will continue their operations. These must be opposed with pursuit aviation and with antiaircraft artillery.

■ 1035. An *air offensive* requires an estimate of the situation to determine the bombing objectives. These should contribute directly to the success of the military or naval operations as a whole. All bombing operations must be coordinated, both in time and in space, so that the full capabilities of the air task force are realized. Extensive and detailed preparatory reconnaissance is mandatory. Distance of the target from the base and the type of target determine the type of airplane required to perform the mission. When distances and loads to be carried are too great for available aviation of suitable type, preliminary operations must be undertaken to seize and prepare bases sufficiently close to the objectives.

■ 1036. There may be great temptation to disperse or dissipate combat aviation. It is the *responsibility of the commander* to whom air task forces are assigned or attached

to decide the relative importance of various lines of action and assure concentrated effort. Bombing attacks once begun must be continued to the complete and permanent destruction of the objective, or must be continued indefinitely at the rate necessary either to neutralize it or to realize the cumulative effect of air bombing. Otherwise, most of the value of any damage inflicted initially is sacrificed. In most situations, aviation units must be conserved in their employment, to insure their maximum effectiveness when most needed. During critical phases they should be thrown into action without hesitation or reservation, in the full strength required or available.

■ 1037. For the general doctrines applicable to combat aviation in *support of ground operations* see paragraphs 78 to 82, inclusive.

■ 1038. Effective close support of ground troops is not practicable until local air superiority has been established.

■ 1039. In *critical phases* of the ground battle, delivery of fire by combat aviation on the immediate front of the ground forces frequently is required. The added firepower and moral effect of combat aviation often are quickly decisive. In order to exploit their full mobility, fire support by combat aviation is ordinarily essential to the operations of mechanized forces. Supporting aviation can assist materially in the supply of, and communication with, fast moving ground forces.

■ 1040. Methods of operation and control must insure prompt and accurate designation of targets, effective use of signal communication, and mutual recognition by friendly units. Intensive preliminary reconnaissance is most desirable. Signal communication for target designation and mutual recognition normally is by panel from the ground, pyrotechnic signals, colored tracer ammunition, aircraft maneuvers, and radio. Wire communication from the supported force to the air unit command post is highly desirable, otherwise radio must be used. Liaison officers are necessary. The organic and attached observation airplanes of the supported unit can assist greatly in coordinating the air and ground actions during the operations.

■ 1041. Close supporting operations on the immediate front of the ground unit may require such intimate coordination,

and the time element in signal communication and staff action may be so short, that the air unit must be attached to the ground unit for operational control for definite limited periods.

■ 1042. Support of *troops transported by air* requires extremely close coordination and close control. Such operations require special air force support, including convoy by pursuit aviation, to prevent hostile air action against the expedition while in flight, and on the ground after landing. Preliminary air attack on the landing area and its vicinity may be required to destroy or disorganize local defenses. During the landing and subsequent ground operations, supporting air operations include the laying of a smoke screen and the attack of defending or counterattacking units, both ground and air. While in flight, control of the movement is a responsibility of the air commander.

CHAPTER 15

THE DIVISION

SECTION I

INFANTRY DIVISION

■ 1043. The infantry division is the basis of organization of the field forces. It is the basic large unit of which corps (except armored and cavalry) and armies are formed. It is the smallest unit that is composed of all the essential ground arms and services and which can conduct, by its own means, operations of general importance. It can strike or penetrate effectively, maneuver readily, and absorb reinforcing units easily. It can act alone or as part of a higher unit.

The combat value of the infantry division derives from its ability to combine the action of the various arms and services to maintain combat over a considerable period of time. In active operations the division should be reinforced with air observation means.

When operating alone, additional aviation, engineer, anti-tank and supply means will normally be required by the division.

■ 1044. There are two types of infantry divisions in the United States Army, which for convenience are designated as the "square" and the "triangular" division. The square division retains the brigade organization for infantry and artillery components, each infantry brigade consisting of two infantry regiments, the artillery brigade of three regiments. In the triangular division, on the other hand, there is no brigade organization. Three infantry regiments and four field artillery battalions comprise the major combat elements.

All organic transportation of the square and the triangular infantry divisions is motorized. Neither of these divisions is provided, however, with sufficient transportation to move all its elements simultaneously.

The triangular division organization eliminates the brigade echelon in the chain of command with a corresponding acceleration of order transmission. The field artillery bat-

talions operate directly under the orders of the division artillery officer representing the division commander.

■ 1045. The doctrines of operations and combat by ground, nonmechanized forces discussed in earlier chapters of this manual are applicable to the infantry division.

■ 1046. When a division is operating as part of a higher unit, restrictions on the freedom of action of the division commander are often necessarily imposed by the higher commander. In an advance the corps commander will ordinarily prescribe a zone of advance for each division of the corps. The road net within the zone may largely influence the march formations and supply arrangements within the division. The corps may also prescribe the general line which advance guards of the divisions will cross at a given time at the beginning of the march, the extent of the march, as well as any special formation of the corps for the advance.

Further coordination may be obtained by designating lines which the various divisions must clear by specified times and by designating rear boundaries for divisions at the completion of each stage of the march.

■ 1047. The army or corps has reconnaissance elements which operate in advance of the divisions. While cooperation and contact between these reconnaissance elements and those of the division are necessary, their presence in no way relieves the division commander of responsibility for reconnaissance by, and security for, his own command.

■ 1048. In combat the mission assigned the division may require the division to act in close coordination and cooperation with adjacent divisions or to operate at a distance from the main force. The decisions and actions of the division commander in either situation are predicated upon the greatest assistance to the successful execution of the task of the higher commander.

■ 1049. In all operations the personal reconnaissance of the division commander is of the highest importance. He makes use of all available means of transportation to reach vantage points from which he can gain direct information and exert his influence most effectively and expeditiously on the operations. He must be provided with alternate means of signal communication so that his orders can be speedily transmitted.

SECTION II

MOTORIZED DIVISION

■ 1050. The *motorized division* is a triangular infantry division which has sufficient additional organic motor transportation to permit the *simultaneous* movement of all its elements.

■ 1051. The motorized division is a specially equipped, highly mobile unit intended primarily for employment by higher commanders. It has greater capability than the normal infantry division for rapid movement under suitable conditions but, when dismounted, maneuvers and fights in the same manner as the normal division. The characteristics of the motorized division make it especially suited to execute the following types of operations:

To provide close support of armored or tank units; to consolidate and hold gains made; to protect the flanks and rear of armored or tank units and permit their continued advance; to relieve armored units when terrain renders their operations unremunerative; and to protect armored or tank elements when withdrawn or halted periodically to refuel or to reorganize.

To seize and hold important localities pending arrival of less mobile forces.

To exploit success achieved by armored, tank, parachute, and other units.

To execute envelopments and turning movements either in close cooperation with armored and other mobile units or, under favorable conditions, independently against hostile flanks and rear or strategic localities.

To constitute a powerful mobile general reserve for use either offensively or defensively as the situation demands.

■ 1052. Except in emergency situations, motorized divisions should be employed on missions which permit initially the utilization of their inherent mobility, primarily in support of, or in cooperation with, other mobile forces. When an independent or semi-independent mission is contemplated for a motorized division, provisions should be made for reinforcing it with reconnaissance and security means, tanks, additional motorized engineers, artillery, or other necessary units.

March procedure must insure proper control and direc-

tion, both day and night, by means of vehicular radio, periodic reports, control posts, guides, direction signs, and other expedients. Additional control and coordination of reconnaissance, security, and combat teams may be assured by designation of phase lines.

Maximum exploitation of the mobility of the motorized division by day will be contingent upon control of the air for the area of movement by motor. At all times, dispositions must be made with due consideration of hostile air observation and attack. An adequate observation and warning system must be in operation continuously and include both ground and air elements. Vehicular antiaircraft weapons must be manned and alert for prompt action at all times during movement and at halts. Maximum use of cover, concealment, and camouflage must be habitual. Distances between columns and vehicles in column are increased, but with due regard for the greater time length of the columns and its effect on the tactical employment of the division.

Close cooperation and coordination of reconnaissance and security agencies of all echelons are essential to assure rapid, uninterrupted, and secure movement of motorized units.

Reconnaissance and security groups obtain and transmit timely information of terrain, routes, and enemy dispositions so as to prevent delay or countermarching of other elements. Engineer reconnaissance agents should accompany divisional ground reconnaissance groups.

■ 1053. The motorized division operates normally as two or more closely coordinated combat teams which may advance by separate routes or zones previously examined by reconnaissance agencies. When the situation calls for a strong attack, the division is assembled for concerted action by appropriate maneuver, so as to develop its full power.

Operations must be conducted with the maximum speed consistent with conditions of terrain, roads, and the tactical situation. For this reason engineers must march well forward in order to insure expeditious advance in difficult areas and negotiation of difficult points. Similarly, commanders must habitually move near the head of respective groups. Decisions must be timely. Orders must be brief, normally oral and fragmentary, and transmitted by the most rapid means available—radio, visual signals, staff officer, or vehicular messenger.

While speed and boldness must characterize the operations of motorized divisions, development for combat must be with a proper appreciation of vulnerability to hostile combat aviation, artillery, and mechanized units. In the approach march, motors move across country when practicable with security provided by reconnaissance vehicles. Assembly areas or de-trucking points should provide maximum security and cover for personnel and vehicles, and be reasonably secure against effective hostile artillery fire. Parks for personnel carriers must be properly concealed and camouflaged. Park locations should facilitate protection without necessity for detachment of combat elements for that purpose. Anticipatory measures for further movement of vehicles from assembly areas or parks must be habitual to include liaison agents and communication with combat elements, reconnaissance of forward and rear routes, and preparation of routes by engineers.

Motorized divisions which are supporting armored units must provide close support and prompt relief in order to facilitate the continued rapid advance of the armored troops.

In situations where further operation of the motorized division is unprofitable, it should be relieved promptly by less mobile troops and released for use where its mobility can be utilized.

In exploiting a break-through, motorized divisions may be used in support of, or in conjunction with, armored divisions.

■ 1054. The mobility of the motorized division provides higher commanders a powerful, flexible means to meet crises in defensive situations and to launch surprise counterblows.

The special characteristics of a motorized division make it especially suitable for execution of delaying missions, except against armored units.

In order to capitalize the mobility of the motorized division, close control of and coordination of combat teams should be emphasized. This involves both communication means and technique and proper use of liaison agents within the division and with other units.

SECTION III

CAVALRY DIVISION

■ 1055. The *cavalry division* is a tactical and administrative unit consisting of a division headquarters and headquarters

troop, two brigades, mechanized reconnaissance, antitank, artillery, engineer, signal communication and service elements. Scout cars, primarily for distant ground reconnaissance, motor trucks for supply, and motorized elements for command and signal communication purposes are all organically assigned. Specially equipped trucks are organically contained in the division to transport a limited number of horses, men and equipment. Its organization is such, however, that it can continue to operate effectively without the motor elements.

The cavalry division may be assigned independent missions which require operations far from other troops. It may constitute part of a cavalry corps; it may be assigned or attached to a corps, an army, or group of armies, or it may be held in general headquarters reserve.

■ 1056. Cavalry is most effectively employed in those areas where the terrain is definitely unfavorable to the operation of mechanized units or in areas known to be free of hostile mechanized forces. If employed in areas where hostile mechanized forces are likely to be encountered, the cavalry division should be strongly reinforced by mechanized and antimechanized means.

■ 1057. The *primary mission* of Cavalry is combat. The mobility of the cavalry division permits it to extend the scope of operation of less mobile ground troops and secure freedom of action for them. In a war of movement, cavalry is employed initially for surprise thrusts into enemy territory, for reconnaissance, and for screening and covering other forces. Thereafter, its most effective employment is in large groups for swift and decisive action. Its main strength must not be dissipated through indiscriminate detachments, nor sacrificed through prolonged performance of missions which can be performed more satisfactorily by other arms.

■ 1058. Cavalry ordinarily executes *reconnaissance* in cooperation with aviation. Aviation locates the enemy at a distance and orients the ground reconnaissance elements, thereby conserving their energy and speeding up their execution of reconnaissance.

■ 1059. The cavalry division executes *reconnaissance* for larger units in accordance with instructions from the higher

commander. These instructions include all pertinent information about the enemy and friendly troops, the missions of the larger units, the intentions of the higher commander, the mission of the cavalry division expressed in terms of the information required, the area to be reconnoitered and the cooperation and coordination between the cavalry division, reconnaissance aviation, and other reconnaissance agencies.

The higher commander assigns to the cavalry division a zone of reconnaissance which ordinarily does not exceed 25 to 30 miles in width. The cavalry division commander redistributes this zone to reconnaissance detachments varying in strength and composition according to the enemy opposition expected and the relative importance of their missions.

In distributing forces for reconnaissance and in assigning missions, the division commander estimates the relative importance of factors affecting the mission of the division and assigns greater strength and a more aggressive mission to detachments operating in decisive zones.

The cavalry division commander indicates the general axes or zones for reconnaissance detachments within the division zone of action and the lines to be reached at designated times by elements of the detachment. The distance between the reconnaissance detachments and the main body of the division varies with the situation; at times it may become several days' march. Reconnaissance detachments are not responsible for the immediate security of the division. This must be provided by the detail of the necessary covering forces.

When reconnaissance detachments are operating at considerable distance from the division, or when secrecy considerations necessitate radio silence, the establishment of advance message centers will facilitate the forwarding of information and reduce the burden on the reconnaissance elements. Under such circumstances, the protection of the advance or relay stations devolves upon the division commander.

When the distance between the main opposing forces is so reduced that the mobility of the cavalry cannot be utilized, the division should be rapidly shifted and, depending upon the situation, directed against the enemy flanks or rear, disposed to protect a flank, or placed in reserve.

■ 1060. A cavalry division protects the disposition and action of other ground forces by *counterreconnaissance* or

screening, which may be conducted either offensively or defensively. In executing a counterreconnaissance mission the division seeks to defeat or neutralize enemy ground reconnaissance forces.

In the performance of counterreconnaissance the cavalry division ascertains at the earliest practicable time the location and activity of the enemy cavalry or other major ground forces whose operations may jeopardize the main forces.

A screening mission is most effectively accomplished by the early defeat of the enemy ground reconnaissance forces. The dispositions of the division in offensive counterreconnaissance are similar to those prescribed for reconnaissance. Reconnaissance detachments operate aggressively and locate the main enemy forces to obtain information for the division upon which it can base further operations. In defensive counterreconnaissance, which is most effective when established along a continuous obstacle, patrols are pushed to the front; and the division commander disposes his forces so as to block the main routes of approach.

When screening the concentration of large forces, cavalry divisions usually act defensively. The screen utilizes available obstacles to the maximum and is established at a sufficient distance to the front to keep enemy ground reconnaissance agencies from observing the location and disposition of the forces being concentrated.

■ 1061. Large bodies of horse cavalry usually *maneuver* mounted and fight dismounted. Cavalry uses the mobility of its horses to gain the advantage of surprise against the hostile flanks and rear from which dismounted fire attacks can be employed effectively and decisively.

Terrain may be the controlling factor. Where concealment exists for a dismounted advance, losses are minimized. Conversely, where there is no concealment or cover, a quick mounted dash from a concealed line of departure often results in fewer losses.

Long mounted advances against troops in position, and mounted attacks against prepared positions, or against troops in position and able to employ their combat power effectively, should not be made.

■ 1062. The dispositions of the cavalry division for *attack* usually include a pivot of maneuver about which the com-

mand operates, a maneuvering mass charged with the main attack, and a reserve.

As soon as contact is foreseen, the division endeavors to secure points of observation and to deny them to the enemy.

In a meeting engagement, the advance guard establishes the pivot of maneuver. In a more deliberately prepared attack, a special force may be detailed to establish it. The pivot of maneuver engages the enemy's attention and pins him to his position by a fire attack or by a combination of fire attack and maneuver.

The maneuvering mass contains the main offensive power and often constitutes the greater part of the division. The division commander assigns to the leader of this fraction the accomplishment of the vital offensive action and allows him sufficient liberty of action to take full advantage of the developments of the situation. He informs him of the general plan, the mission of the maneuvering mass, and the duties of the other elements of the division. He usually specifies the general location, and the route thereto, from which the attack of the maneuvering mass is to be launched.

■ 1063. The *reserve* is kept mounted or close to its horses. Its initial location depends upon its contemplated employment. The division commander uses the reserve promptly to strike at a weak area in the hostile dispositions, to push through a success gained either by the pivot or the maneuvering force, or to pursue a defeated enemy. Should the attack fail, the reserve may be employed to cover the reorganization, to assist in holding the position gained, or in occupying a rear position when a withdrawal follows.

■ 1064. When a cavalry division is to be employed in the *exploitation* of a break-through, it is moved to the vicinity of the main effort of the attack which is expected to break through the enemy's defenses. The breach should be sufficiently wide to enable the cavalry division to pass through without receiving severe fire from the flanks. The mission assigned the division on clearing the breach is clear-cut, aggressive, and should be relentlessly carried out.

■ 1065. When the cavalry division constitutes an encircling force *in pursuit*, it seeks to block the enemy retreat, especially at defiles and other critical areas; it delivers attacks against

the enemy flanks, and carries out destruction on his lines of retreat.

■ 1066. When the cavalry division is acting alone, it seeks to destroy the hostile retreating force by direct pressure and encircling pursuit. (See ch. 9.)

■ 1067. Cavalry divisions may be employed on the *defensive* to seize and hold a position pending the arrival of other forces, to cover a withdrawal, to delay the enemy's advance, or to fill a gap in the line of battle.

■ 1068. Within the scope of its powers and limitations, cavalry operates, in defensive combat, the same as infantry.

Due to organization and characteristics, cavalry units usually occupy comparatively broader fronts with less depth than do corresponding infantry units.

In defensive combat the position or area to be defended is prepared for defense and occupied by a small proportion of the available cavalry force consisting principally of horse elements, while the bulk of the command including the mechanized elements, by maneuver and threat, or actual attack, endeavors to block or divert the enemy at a distance. Even when it is necessary for cavalry to defend a particular area or position, its best chance of success lies in initial dispositions in advance of the final defense area. In this manner, inherent mobility will be used to best advantage. Against an enemy strong in cavalry, the division reserve should be large.

■ 1069. In executing *missions of delay* the cavalry division employs defensive tactics, offensive tactics, or a combination of the two, consisting of frontal delay and flank attack.

It avoids decisive combat.

Every effort is made to surprise the enemy by the choice of delaying positions and by the forms of action used.

The maximum amount of time is gained by forcing the enemy to reconnoiter, maneuver, and deploy.

The delaying force checks the enemy by bold and aggressive action, mounted and dismounted.

It usually withdraws before suffering serious loss unless its missions require more determined resistance.

Surprise attacks delivered over previously reconnoitered ground on the heads of hostile columns as they emerge from defiles, woods, or villages, have excellent chance of success.

SECTION IV

ARMORED DIVISION

ORGANIZATION

■ 1070. The *armored division* is the basic large armored unit of the combined arms. It comprises troops of the essential arms and services so organized and equipped as to make it tactically and administratively a self-contained unit, capable to a considerable extent of independent action.

■ 1071. The armored division is a powerfully armed and armored, highly mobile force. Its outstanding characteristics are its battlefield mobility and its protected fire power. Other important characteristics are: extended radius of action; shock power; logistical self-containment; and great sensitiveness to obstacles, unfavorable terrain, darkness and weather.

■ 1072. The armored division is organized primarily to perform missions that require great mobility and firepower. It is given decisive missions. It is capable of engaging in all forms of combat, but its *primary role is in offensive operations against hostile rear areas*.

■ 1073. Two or more armored divisions may be organized into an armored corps. (See FM 100-15.)

■ 1074. The armored division consists fundamentally of five echelons: *command, reconnaissance, striking, support, and service*. The component arms and services are organized, equipped and trained to operate within the division framework in accordance with their tactical role. When operating separately or as part of an armored corps, the division is reinforced by the attachment of such additional arms and services and by the support of such aviation as the mission and situation demand.

■ 1075. The *command echelon* is organized and equipped for great speed in the conduct of operations. Plans must be simple and flexible. Rapidly changing situations require advance planning, preparation of terrain studies, and *close contact* with developments in forward areas in order to make changes in the initial plan and expedite the announcement of subsequent decisions and orders. Maximum use is made of

standing operating procedure, air liaison, and special pre-arranged signals.

■ 1076. The *reconnaissance echelon* performs ground reconnaissance for the armored division. If necessary, it fights for information. It works in close cooperation with observation aviation, troops transported by air, and supporting ground units. Its reconnaissance is characterized by fast, bold, aggressive action and by prompt transmission of information procured. Success of armored operations depends largely on prompt and aggressive exploitation of the results of reconnaissance. In many situations, the reconnaissance echelon seizes terrain objectives in advance of the division pending the arrival of other elements. Under certain conditions it executes delaying missions. During combat it may be assigned reconnaissance or security missions or may be held initially in division reserve to meet emergencies.

■ 1077. The *striking echelon* is the main attack force of the armored division. It consists of tank regiments reinforced as the situation requires by other elements organic to the division. Reconnaissance and heavy weapons elements are included in the tank organizations.

■ 1078. The *support echelon* consists of infantry carried in armored vehicles. It is reinforced by artillery and other organic elements of the division in accordance with the mission and tactical situation. Its basic role is to support closely the striking echelon by offensive or defensive action.

■ 1079. The *service echelon* assures prompt supply, evacuation, maintenance, and administration of the division. (See FM 100-10.)

■ 1080. The *artillery* components are organized and equipped to render immediate, controlled fire support to the various elements of the division. Timely support is facilitated by the organization and equipment of armored artillery and the transmission of information by radio.

Once the attack is in progress, the speed of the striking force may make its support by artillery impracticable. Combat aviation must take over and execute the missions assigned to artillery in more slowly moving operations.

■ 1081. *Engineer units* facilitate the movement of the armored division by removing, or assisting in the passage of, obstacles and mine fields; by strengthening bridges; and by constructing, repairing, and maintaining crossings. Demolitions and natural and artificial obstacles are used to hinder or canalize movements of hostile forces. Engineers engage in combat when necessary for the accomplishment of their assigned work.

■ 1082. The *signal troops* of the armored division are organized for the rapid establishment and maintenance of signal communication. Because of its speed, radio is the principal means used, but all practicable means are provided. Effective signal communication between armored units and supporting artillery and combat aviation is vital in armored operations.

■ 1083. *Combat aviation* is employed against hostile aviation to prevent air observation and attack of the division. During battle it is used for direct support of operations. Its missions include attacks on hostile command and supply installations; attacks on hostile reserves and formed bodies of troops, particularly hostile armored units; attacks on hostile antitank weapons, artillery, and other ground weapons; attacks on targets of opportunity and critical points in the enemy position and the maintenance of air superiority in the decisive areas.

■ 1084. *Observation aviation* performs command, reconnaissance, observation, liaison, and signal communication missions and cooperates closely with the division reconnaissance echelon. Air observation of artillery fire is necessary if fire is to be delivered on targets which cannot be observed from the ground. Observation aviation maintains effective liaison and coordination between the tanks, artillery and combat aviation.

■ 1085. *Troops transported by air* may be employed in conjunction with the operations of the armored division to land in advance of it, to secure terrain objectives on the routes of march or to seize vital points in rear of the hostile front.

■ 1086. Attached *antiaircraft units*, equipped with weapons suitable for both air defense and antitank employment, pro-

vide protection of areas and installations vital to the operations.

■ 1087. Attached *chemical units* are charged with the planning, execution, and supervision of chemical operations. They are employed to supplement organic means of the division in the execution of smoke missions during operations.

RECONNAISSANCE

■ 1088. Speed of movement of the division and of the enemy requires air and ground reconnaissance forces to operate at great distances from the main body. The distance at which air reconnaissance operates is never less than the operating range of hostile armored forces. These distances at which the division reconnaissance battalions operate are influenced by the imminence of contact with hostile ground forces and the characteristics of these forces. Reconnaissance agencies of lower units search the area intervening between the division reconnaissance battalion and the main body. When the threat of hostile air attack is present, air reconnaissance includes the known location of the threat and is extended to such distance as will afford the division and supporting pursuit aviation ample warning of an air attack.

When necessary, the air reconnaissance effort is supported by combat aviation; ground reconnaissance units of the division are given such additional support from other elements of the division as the situation and mission demand.

■ 1089. In conjunction with the execution of specific missions, all reconnaissance elements report information of terrain, roads, signal communication facilities, landing fields and supplies observed. Ground reconnaissance elements should include engineer personnel whose mission is to determine the condition of roads and bridges and furnish timely information of any repairs or construction required. Negative reports must be submitted with the same promptness as is positive information.

SECURITY

■ 1090. Security depends largely on the efficacy of concealment, of supporting combat aviation and antiaircraft artillery, and of ground security detachments in preventing discovery in bivouac and during movement.

Timely warning from far reaching, aggressive, air and ground reconnaissance is vital to protection against surprise. Natural barriers, with their crossings or passes destroyed or blocked, and defended, provide a high degree of ground protection with economy of force for both the division and its lines of communication. Camouflage, dispersion, concealment, and high speed in movement, combined with the aggressive employment of combat aviation and antiaircraft weapons, afford the best security against air attack.

■ 1091. Precautions and protection against attack, principally against air attack, are stressed during periods of refueling and maintenance. Congestion must be avoided. Maximum use is made of concealment and cover.

■ 1092. In cooperation with large forces, security may be provided initially by other troops so that the armored operations may come as a complete surprise to the enemy. During subsequent operations, the superior commander may prescribe security measures to be performed by other troops for the protection of the combat elements of the division, the mobile supply base, and the lines of communication. In all situations, columns or groupings of the division are responsible for their own local security.

■ 1093. Bridges over unfordable streams, passes through mountains, and other defiles are seized in advance of the main body and protected against both ground and air attack. Existing natural barriers paralleling the direction of advance are used to establish protected corridors for security of the division and its lines of communication.

■ 1094. Usually *security detachments* for daylight movements are composed of tank units reinforced by other arms. During night movements, during extended periods of tank maintenance and refueling, or when terrain is occupied for protection, infantry and machine guns are the principal component. Security detachments for the movement are smaller and operate at greater distances between elements than for cavalry or foot divisions.

■ 1095. During movement, *frontal security* is normally performed by column advance guards.

In proximity to hostile armored forces, column advance guards are stronger and operate at a greater distance from the main body than when opposed by other hostile forces. Zones of responsibility are assigned by division to column commanders.

■ 1096. During movement, *flank security* is provided where practicable by utilizing natural and artificial obstacles, protected by detachments and by flank guards detailed by column commanders.

■ 1097. During long halts, and in bivouac, the division secures itself principally by far reaching reconnaissance, by skillful use of terrain and natural and artificial barriers, by depth of disposition in the halt area, by an outpost and by local security measures. In proximity to the enemy or behind the enemy lines, all around security is provided. Infantry, with artillery, antitank and engineer units, constitutes the principal element of the outpost.

■ 1098. The area selected for a halt to assemble, reorganize, rest, or refuel should permit rapid communication with reconnaissance elements, and should provide natural terrain barriers to hostile attack, particularly in the presence of hostile armored units. The halt area may be utilized as a base for the continuance of operations.

■ 1099. Based on information received from its reconnaissance and security agents, the armored division dispatches troops and combat aviation, if available, to destroy a known, potential hostile threat before that threat can become a real danger to the division.

MARCHES

■ 1100. The armored division normally marches in multiple columns to facilitate readiness for action and protection against hostile air and armored force attack. In the presence of hostile aviation, secrecy, surprise and protection are favored by night marches. When tactical considerations govern, march columns are constituted in accordance with the probable employment of the striking and support echelons in combat. Mobility is exploited to achieve surprise.

■ 1101. The tank elements usually lead when the column contains both tank and infantry units. However, during hours

of darkness, when the situation is obscure, when the plan of maneuver contemplates the commitment of the infantry prior to the tanks, and when the employment of the tanks cannot be reasonably foreseen, infantry is placed in the lead.

OFFENSIVE OPERATIONS

■ 1102. Tactical operations of the armored division are characterized by bold maneuvers executed at high speed to create a preponderance of power in the decisive area. Combat action is further characterized by the maximum coordination possible initially, followed by decentralization of means and reliance upon the initiative of subordinates.

Operations are predicated upon deliberate, detailed planning and rapid, aggressive execution. Completeness of plans is limited only by the time available.

The timely personal influence of the commander must be exerted in all operations. He must have at his disposal various means of rapid transportation and signal communication to enable him to exert this influence.

■ 1103. All armored force attacks contemplate the rapid transfer of shock power and protected fire power into the vital part of the hostile rear area from an unexpected direction. The attack is launched in mass in a decisive direction with such speed and violence that the enemy is afforded no time or opportunity to organize and coordinate his reaction before the armored attack mission is accomplished. Such attacks produce early, hostile demoralization and decisive results.

■ 1104. The mobility of the armored division permits great latitude in the choice of direction and method of attack. Whether the attack will be executed as a turning movement, envelopment, or penetration, will be largely determined by the hostile dispositions and organization of the ground, the terrain, the time factor, and lines of communication within the hostile area.

■ 1105. Four conditions should be present or be created for successful offensive action: air superiority, surprise, favorable terrain, and the absence or neutralization of massed enemy defensive means.

■ 1106. In order to obtain surprise, all preparatory movements are carefully concealed and measures are taken to prevent hostile ground and air observation of the division. The mobility of the armored division is exploited to keep the enemy in doubt as long as possible as to the area of its employment. Radio often is silenced prior to the attack. After the attack is launched the element of surprise may be retained by sustained speed and power.

■ 1107. Areas favorable for attack are determined from the information obtained by map study, from reconnaissance agencies, from higher and adjacent units, and from troops already in contact with the enemy.

Armored units can be employed on comparatively rough terrain. Localities with heavy timber, high boulders and stumps, steep slopes, marshes, deep or muddy bottom streams, and streams with abrupt banks are, however, obstacles to armored vehicle operations. Defended towns or cities are avoided.

■ 1108. Ground antitank measures include natural and artificial obstacles, demolitions, strongly organized localities, mine fields, antitank weapons, artillery and armored units. The attack is planned so as to neutralize, blind or overcome the hostile antitank defenses in the zone of attack and to strike at defensive weakness.

■ 1109. In attack the combat elements of the armored division generally are disposed into three parts: a striking force (striking echelon), a supporting force (support echelon), and a reserve.

■ 1110. When the initial terrain is unfavorable for tank operations or when hostile antitank defenses are strong, the support echelon of the armored division may attack in advance of the striking force to secure ground favorable for the initiation of the tank attack. If operating in close cooperation with other troops, the entire armored division may be held out until the difficult zone has been taken by other troops or has been disrupted by artillery and air attack.

When conditions permit the striking echelon to lead the attack the support echelon follows the striking force to occupy and hold objectives seized by the striking force.

■ 1111. Reserves are employed to protect the flanks of the attack and to maintain its continuity and direction.

■ 1112. Except when the attack is launched by passing through foot troops already in position, the division as a whole usually assumes attack formations directly from march columns. Ordinarily, a short halt is necessary for subordinate units to designate objectives on the ground.

■ 1113. Zones of action and a line of departure often are prescribed for coordination. Attacking tank units are disposed in approach march formation when they cross the line of departure. As soon as resistance is encountered by covering detachments, the leading tank waves assume attack formations.

■ 1114. Prominent terrain features may be designated as phase lines to coordinate the effort of all troops, including supporting combat aviation.

■ 1115. The depth and frontage of the initial combat formation depend primarily upon known hostile dispositions and characteristics, the terrain, and distance to the objective.

The attack of the striking force must be organized and launched with sufficient depth to insure sustained striking power. It is delivered on the minimum frontage necessary to overcome resistance to its advance.

■ 1116. The attack is rapid, deep and sustained until the decision is won. It is characterized by the employment of the striking echelon in mass in a series of waves, by rapid concentrations of artillery, heavy machine-gun and combat-aviation fire on critical objectives, and by proper timing in the engagement of reserves.

■ 1117. Each subordinate tank unit in the attack is assigned a direction and one principal objective. Suitable objectives are those hostile elements or installations, the destruction of which will disrupt most effectively the enemy operation.

■ 1118. The situation, hostile dispositions and characteristics, the number of objectives which can be assigned definitely to major tank units, the direction of advance to the assigned objectives, and the terrain may admit an attack in column of waves or they may require echelonment of the waves on one or both flanks.

In an obscure situation the main attack is launched in a deep column of deployed tank units. This formation is flexible, is easy to control during later deployment, and makes available the means with which to meet unforeseen contingencies.

■ 1119. The infantry element of the support echelon is transported in armored personnel carriers. It remains mobile as long as the situation permits. When assigned the mission of following the striking echelon, it follows closely; prepared to overcome the remaining hostile resistance in the areas over which the tanks have passed, to occupy and hold the ground gained, or to cover the reorganization of tank units during the course of the attack. Prior to the attack by the striking echelon, it may be used to develop the enemy situation with a secondary attack supported by artillery, combat aviation, engineers, and, when necessary, by some of the tanks.

■ 1120. The attack of the armored division requires careful coordination of the supporting fires of the artillery, heavy infantry weapons, including mortars, and combat aviation to prevent concentration of hostile mobile antitank weapons in the zone chosen for the offensive, and to neutralize enemy weapons dangerous to the attack.

At times preparatory fires may be omitted in order to attain surprise.

■ 1121. The artillery covers the development of the division. It may be employed to neutralize hostile rear defenses until the engagement of the tanks or to concentrate on areas secure from tank attack. In support of the division attack the artillery fires are directed to the neutralization of the antitank defense and artillery which constitute the greatest threat to the advance. Frequently small artillery units are pushed forward, prior to the attack, in order to deliver direct fire on targets of opportunity. Prearranged signals and messages are used to facilitate cooperation between the tanks and supporting weapons.

■ 1122. In a meeting engagement with unarmored troops the attack is pushed to conclusion without delay. The attack is launched promptly and aggressively in order to afford the enemy no time to develop and concentrate his defensive means. Tank attacks on a broad front against a flank will

engage a greater number of enemy troops simultaneously and permit a maximum use of shock and fire power. If flank attacks are not practicable, frontal attacks with deployment on a narrow front in great depth are made from march columns.

■ 1123. In a meeting engagement with hostile armored units the advance guard, supported by artillery and combat aviation, attacks to limit hostile maneuver to the front and to deceive the enemy regarding the direction, time and strength of the main blow. The situation may favor the main blow as a follow through of the advance guard action. Otherwise, the division seeks to launch its striking force against the flanks and rear of the hostile force to surround and destroy it.

Supporting combat aviation attacks hostile tanks, artillery, antitank weapons, reserves, and reinforcing troops.

■ 1124. In an enveloping attack by the division acting alone, against an enemy in position, the support echelon may attack to fix the enemy front while the striking echelon makes the main attack. In cooperation with other large unarmored units, the entire armored division is employed to make or lead the enveloping attack while other units hold the enemy in position.

When the direction of the envelopment has been determined, the striking echelon preceded by its reconnaissance units and covering detachments, develops and maneuvers rapidly to launch its attack. Elements of the support echelon not required for the secondary attack, follow the striking echelon closely.

■ 1125. The armored division penetrates an enemy position on a narrow front and then extends to attack the enemy rear in order to destroy his defense and exploit the success.

■ 1126. In penetrations of organized positions in cooperation with other large units of the combined arms, the zone of the initial break-through may be neutralized or breached by other troops. The armored division is then employed to continue the attack and complete and exploit the hostile disruption. It is followed immediately by other highly mobile units to extend, widen, or hold the breach. Motorized divisions are especially suitable for this purpose.

■ 1127. Delay in launching the armored division through a neutralized zone or a breach affords the enemy time in which to organize and coordinate countermeasures and may result in a serious reverse.

The shoulders of the gap must be held securely, either by troops of the support echelon or by other troops. The passage of the armored division through the breach must be effectively protected against antitank gun fire and hostile air and ground reaction. Once the breach has been effected, the enemy must not be permitted to close it. Flank attacks continue to widen the breach.

Hostile counterattacks against the flanks of the penetration are met by combat aviation, by reserves, and by the fire of artillery, antiaircraft artillery and antitank weapons.

■ 1128. When forward progress of attacking units is stopped by hostile resistance, fire of artillery and combat aviation is concentrated on the resistance, and flanking movements are initiated at once.

Elements of the support echelon, reinforced by combat aviation, artillery, and engineers, may be employed to advance the attack beyond terrain obstacles or ground unfavorable for tank action.

■ 1129. Some reorganization of assault units is often necessary after each tank objective is overrun. The leading waves may be passed through by other tank units. Every effort must be made to maintain the continuity and speed of the attack.

■ 1130. If the tank attack is unsuccessful initially, the advance elements of the support echelon strong in machine guns and antitank guns immediately establish a position behind which the tanks withdraw and reorganize for further effort. The supporting artillery and combat aviation protect the reorganization.

■ 1131. When the armored division has passed through the hostile organized resistance, its ground reconnaissance elements are dispatched at once toward the objective. These elements, working in close cooperation with the air reconnaissance, report hostile reserves and artillery, hostile command and supply installations, and unfavorable terrain. Appropriate targets are attacked.

■ 1132. The division must provide flank protection. Flank protection is aided by the speed of the advance, the utilization of natural barriers on the flank and by the support of combat aviation.

■ 1133. When the striking echelon captures its objective, the necessary reorganization is initiated at once under the protection of the support echelon, artillery and combat aviation.

Reorganization and consolidation of the objective are limited to the essentials. An advance to a second objective or exploitation of the success is begun without delay. Exploitation often will be executed in close cooperation with other highly mobile troops which have been moved close behind the armored division in its attack.

Extended exploitation may be initiated immediately after passage of the hostile organized resistance without waiting for reorganization or consolidation of the objective. This is particularly true in attacks against inferior hostile troops and against troops weak in aviation and mechanized units.

■ 1134. The armored division may be employed to exploit its own success and the successes of other troops by rapid attacks from the rear to overrun the hostile artillery, to destroy reserves and command and supply establishments, to break up hostile counterattacks, and to block strong reserves moving to restore the battle position or to occupy rear positions.

■ 1135. In exploiting a break-through the armored division is effectively employed to operate at great distances in the hostile rear areas to block routes of hostile movement, to attack strategic reserves, and to seize vital areas. In such operations, the division normally constitutes a part of a larger armored force which is closely followed by other mobile units, such as motorized divisions. Since the purpose of these operations is the complete destruction of the enemy, by placing a powerful striking force in his rear, the division moves through the area of the break-through at the greatest possible speed. Troops transported by air may be suitably employed in advance of the armored divisions. Opportunities for decisive exploitation by armored forces must be created.

■ 1136. Before directing exploitation or pursuit, the commander of the armored division must assure the required

supply of ammunition and motor fuel in combat elements. His plan must include provision for both supply and motor maintenance during the subsequent operations. Normally, little dependence should be placed on procuring motor fuel locally.

■ 1137. Once undertaken, pursuit must be boldly pushed with the utmost vigor and ruthlessness. Acting alone, the division organizes all combat elements for pursuit by direct pressure and by encirclement. A strong encircling force is provided. The tank units with the direct pressure force seek to pass through gaps which the attack may have opened in the hostile dispositions or to gain the rear of the enemy's covering force in order to attack the withdrawing hostile elements. The encircling force moves to strike the heads of the retreating columns by placing itself across the line of retreat on terrain favorable for its operation.

■ 1138. In a pursuit, when operating with large forces, the armored division reinforced with highly mobile units is normally employed as an encircling force.

■ 1139. In all pursuit operations, combat aviation acting in conjunction with the pursuing armored units materially assists in obtaining decisive results.

DEFENSIVE OPERATIONS

■ 1140. The employment of the armored division on a defensive position seriously restricts the use of its mobility and should be resorted to only in emergency.

■ 1141. Opposed to greatly superior armored forces, the division avoids decisive combat if its mission permits such action. If its mission requires it to gain time, it either occupies terrain unfavorable for hostile tank attacks or employs delaying tactics. When a position must be defended by the division against superior hostile armored troops, every advantage is taken of obstacles to protect the position and restrict the direction of the hostile attack.

The position selected should afford room for maneuver, suitable terrain for counterattacks and concealed routes of withdrawal. The units of the support echelon organize defense areas disposed in depth so as to take full advantage of

obstacles. The tank units prepare plans for counterattacks and for ambush against hostile tank units.

■ 1142. When the terrain is favorable, the armored division either alone or in cooperation with other forces may be employed in counterattack. The characteristics of the armored division may justify assigning it objectives considerably deeper or further to a flank than those whose capture would be necessary merely to restore the defensive position.

■ 1143. When a large force reinforced by armored divisions passes from the defensive to the offensive, the armored divisions may be employed rapidly to envelop a hostile flank or to form the spearhead of a penetration of a weak portion of the hostile front.

■ 1144. In delaying action against less mobile forces the support echelon operates against the heads of the advancing enemy units, while the tanks threaten or attack the hostile flanks and rear. Against hostile armored troops, every effort is made to locate each delaying position behind a formidable natural obstacle. Tank units protect the flanks and execute local counterattacks.

CHAPTER 16

GHQ TANK UNITS

■ 1145. Tank units of GHQ reserve consist of separate tank battalions and tank groups. A group is composed of a group headquarters and several tank battalions.

GHQ tank units are usually allotted to infantry, cavalry, and armored divisions for specific operations. One or more groups or several separate tank battalions may form the nucleus of a composite force, including the necessary supporting arms and services, for employment on tasks similar to those of the armored division. (See ch. 15.)

■ 1146. Properly employed, *tank units* constitute a powerful maneuvering force in the hands of a higher commander with which to influence the course of combat. In the defense they constitute an effective means of counterattack.

For the effective employment of tanks adequate air or map reconnaissance of the terrain and knowledge of the general hostile dispositions are essential.

Tanks are essentially offensive weapons; they are employed in mass on ground favorable to their characteristics, they are assigned missions, the accomplishment of which will assist the supported troops to reach their objectives, and, if practicable, to assist the main attack. When widely distributed or engaged piecemeal, tanks suffer rapid destruction from the concentrated fire of artillery and antitank weapons.

■ 1147. Tanks in the attack are given successive objectives. When hostile resistance at each objective is subdued, they reorganize and prepare for further employment. Tanks should not be tied too closely to foot troops. If so restricted, their mobility is sacrificed and they become a vulnerable target for antitank weapons.

In the attack, tanks are disposed in depth. The first echelon, supported by artillery and combat aviation, has the mission of destroying the hostile antitank guns.

The next echelon is composed of the tanks which accompany or immediately *precede* the other attacking units. The mission of this echelon is to overrun the hostile position just prior to the arrival of the assaulting troops and destroy the hostile automatic weapons which have survived the preparatory fires. Attacking troops promptly take advantage of the tank action, advance to and occupy each successive objective.

■ 1148. Occasionally, it is advisable to delay the entry into action of tanks until a late phase of the attack to replace the fire of artillery as it lifts for the assault, to supplement the diminished artillery fire when batteries are displacing, or because of the character of the terrain or the hostile anti-mechanized defenses.

■ 1149. The employment of tanks in no way lessens the need for strong fire support. Combat aviation and the supporting fires of artillery, chemical weapons, and other supporting weapons, are carefully coordinated with the advance of the leading echelon. The mission of fires supporting the tank action is to neutralize hostile antitank guns and hostile observation posts, to place protective fires on dangerous localities which tanks must pass, to destroy mine fields and obstacles, and to block the movement of hostile reserves, particularly antitank and mechanized units.

Observation aviation cooperates in the detection of obstacles, hostile artillery, and hostile forces assembling for counter-attack, and provides liaison between the tanks and supporting fires.

Efficient signal communication between tanks and the supporting artillery and combat aviation is indispensable.

■ 1150. The employment of tanks in attack must surprise the enemy. When there is a possibility that the enemy has discovered the presence of tanks, their mobility must be exploited to keep the enemy in doubt and to deceive him regarding the front selected for their employment.

■ 1151. The strength of the antimechanized defense which will be encountered by a tank attack will depend largely upon the length of time the enemy has had to organize his position and the effectiveness of our measures for secrecy and deception.

When tanks are employed in an attack, intensive reconnaissance to discover antimechanized defenses must be initiated promptly and must be continued throughout the tank action.

When necessary, engineer troops with suitable equipment are attached to tank units to assist their advance. Mine fields and serious obstacles must be destroyed before the tank attack is launched. Their destruction must be accomplished at the last possible moment in order not to warn the enemy of the impending attack.

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